

FLIGHT

The
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ENGINEER
&
AIRSHIPS

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"FLIGHT" PHOTOGRAPHS.

To those desirous of obtaining copies of "Flight" Photographs, these can be supplied, enlarged or otherwise, upon application to Photo. Department, 36, Great Queen Street, W.C.2

For Sizes and Prices, see Advert. on page iii.

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

1928

- Feb. 11 Rugby, R.A.F. v. Navy at Twickenham
- Feb. 14 R.Ae.S. & Inst.Ae.E. Dinner and Discussion, at Engineers' Club.
- Feb. 15 Members' Meeting of London Aeroplane Club, at the R.Ae.S.
- Feb. 16 "Experiments on Model Airscrews at High Tip Speeds." Mr. G. P. Douglas, before R.Ae.S. & Inst.Ae.E.
- Mar. 1 "Experiences with the Baghdad Air Mail." Wing-Com. R. M. Hill, before R.Ae.S. & Inst.Ae.E.
- Mar. 3 Rugby, Navy v. Army, at Twickenham
- Mar. 15 "Testing of Materials Used in Aircraft Construction." Dr. Rudolf, before R.Ae.S. & Inst. Ae.E.

EDITORIAL COMMENT



RUBBING one's chest and at the same time patting one's head used to be among the parlour tricks indulged in many year ago, in the days when amusements were simple and before the capacity to enjoy them had vanished. Modern youth gets into an aeroplane and, without thinking twice about it, carries out movements many times more complicated than those of that simple trick. It might appear at first sight that there is no obvious connection between "rub your chest and pat your head" and the controlling of an aeroplane, and yet in the end the two things are discovered to be very closely related. In both, the brain directs the limbs to make two or more different movements simultaneously. The feet operate the rudder bar, while the hand moves the "joy stick" from side to side for lateral control and fore and aft for ascending and descending. In actual flight, all three movements are not usually carried out separately but as one manœuvre, and although he (or she) may not realise it, one of the things learned by a pupil during a course in practical flying is just that co-ordination which the old trick demanded in but a very mild degree. It is true that when the present system of aircraft controls was standardised, attempts were made to introduce other forms (for instance, we had the shoulder yoke aileron control in the early Curtiss machines), but the present system survived because of all those suggested, it was found to be the most "natural," i.e., necessitating fewer non-instinctive movements, and consequently the system which is now universal, probably had its foundation on sound psychological grounds. Curiously enough, the "bicycle steering" did not survive the weeding-out process, and the foot steering now universally adopted is directly opposite to bicycle steering in that to turn to the left one pushes with the left foot, while on a bicycle one pushes forward the right hand. The shoulder yoke for aileron control was probably if anything a more "natural" movement than the corresponding movement of the "joy stick" in that, it was claimed, and probably rightly so, one would

instinctively lean towards the high side, or perhaps it would be more correct to say away from the low side. However, the present system has become universal, and is not likely to be changed.

Taking the existing system as it stands, it is probably fairly "instinctive." That it is not obviously so will very quickly be found out by anyone who has an opportunity of being tested by the Reid reaction apparatus which is described and illustrated this week, and in which the time taken to centralise a set of normal aircraft controls from their extreme positions is recorded. One control at a time is easy. The foot bar can be centralised by most people in a second or a little over. The "joy-stick" takes but very little longer. But let one attempt to centralise both simultaneously, and it will be found that, except in the case of a pilot of considerable experience, the combined action will take a good deal longer. Here we have, in fact, the old "rub your chest and pat your head" trick in a different form, and most people will be surprised to find how relatively difficult it is to make the apparently very simple movements required.

The Reid reaction apparatus, designed by the inventor of the Reid turn indicator now fitted on so many civilian machines, is based upon the psychological supposition that co-ordination of brain, hands and feet is the faculty which is constantly being exercised while an aeroplane is being piloted, and that the man who possesses this co-ordination in a well-developed form is likely to make a good pilot. Whether or not this is actually the case may be discussed by psychological experts, and does not greatly concern us here. What we are interested in is results, and experience over a considerable number of years seems to indicate that in something like 80 per cent. of cases, the man whose reactions proved good when he was first tested on the apparatus turned out to be a good pilot. In a somewhat similar percentage of cases the man who "produced a bad curve" on the apparatus was found, on being put to actual flying, to turn out a bad pilot.

That being so, it will at once be obvious that in

the Reid reaction apparatus we have a very efficient instrument for ascertaining rapidly and cheaply whether a prospective candidate for the R.A.F. is likely to make a good pilot, an indifferent one, or a frankly bad pilot. The apparatus is not infallible. Nor does it indicate if a man is a fool in the way that, although he can and does handle his machine in masterly fashion as regards the sheer handling of it, he does stunts close to the ground or gets into positions where even a temporary engine failure will lead to disaster. But it does seem to indicate with amazing accuracy the great majority of good and bad pilot material, as well as the broader band of averages.

One of the great advantages of the apparatus is that it can be operated by a relatively unskilled man after a very short period of training. Thus the highly-paid experts need not waste their time on obtaining a man's record, but can devote their whole attention to *judging* it once it has been produced. The saving to a nation which the Reid reaction apparatus can achieve is not readily estimated, but as it probably costs a country several thousands of pounds to train a man up to the point where he is a thoroughly efficient pilot, it will be clear that the apparatus will very quickly pay for itself, apart from the somewhat important fact that it may actually save a number of lives by indicating at the very outset that a man has not the co-ordination of brain and limbs which is one of the first qualifications. There are others, of course, such as physical fitness, good eyesight, and so forth, but the medical branch can well look after them. Given these qualities there is a reasonable case for assuming that the man (or woman) whose reactions are found to be good has a prospect of becoming a good pilot after proper training. It should be emphasised, however, that the Reid reaction apparatus does *not* teach a pupil to fly, although there is a not inconsiderable volume of evidence to the effect that diligent practice on the apparatus may cure a pilot of certain bad habits or small defects in his handling of the controls.

Wright Biplane for South Kensington

THE original Wright biplane which Mr. Orville Wright first flew at Kitty Hawk, North Carolina, on December 17, 1903, is on its way to England to be housed in the South Kensington Museum. Mr. Orville and his brother Wilbur, who died in 1912, both wished that America would keep their machine, but apparently differences have arisen with the Smithsonian Institute over their description of Prof. Langley's machine as the first 'plane to make a successful flight. At Dayton last Friday, February 3, Mr. Orville Wright expressed his regret that the machine was leaving the country. He said the attitude of the Smithsonian Institute had made this impossible. Under his agreement, however, with the South Kensington Museum he will be able to withdraw the machine at any time.

Aircraft in Small Wars

At the Royal United Service Institution on February 1 Wing-Commander R. H. Peck, Directorate of Operations and Intelligence at the Air Ministry, gave a lecture on "Aircraft in Small Wars." He explained that he was expressing his personal views and not official views. It would take a revolution of ideas, he thought, before full use of aircraft was made in small wars. Air operations would be infinitely less costly than if the Army were used; for often a few aeroplanes with a few delay-action bombs was all that was necessary. Aircraft did not seek its effect by reason of the number of casualties it caused. It worked like a third degree, causing intolerable tedium and discomfort and disrupting the normal life of the enemy. It was the most merciful form of warfare. Air-Marshal Sir John Salmond also spoke at the lecture. The

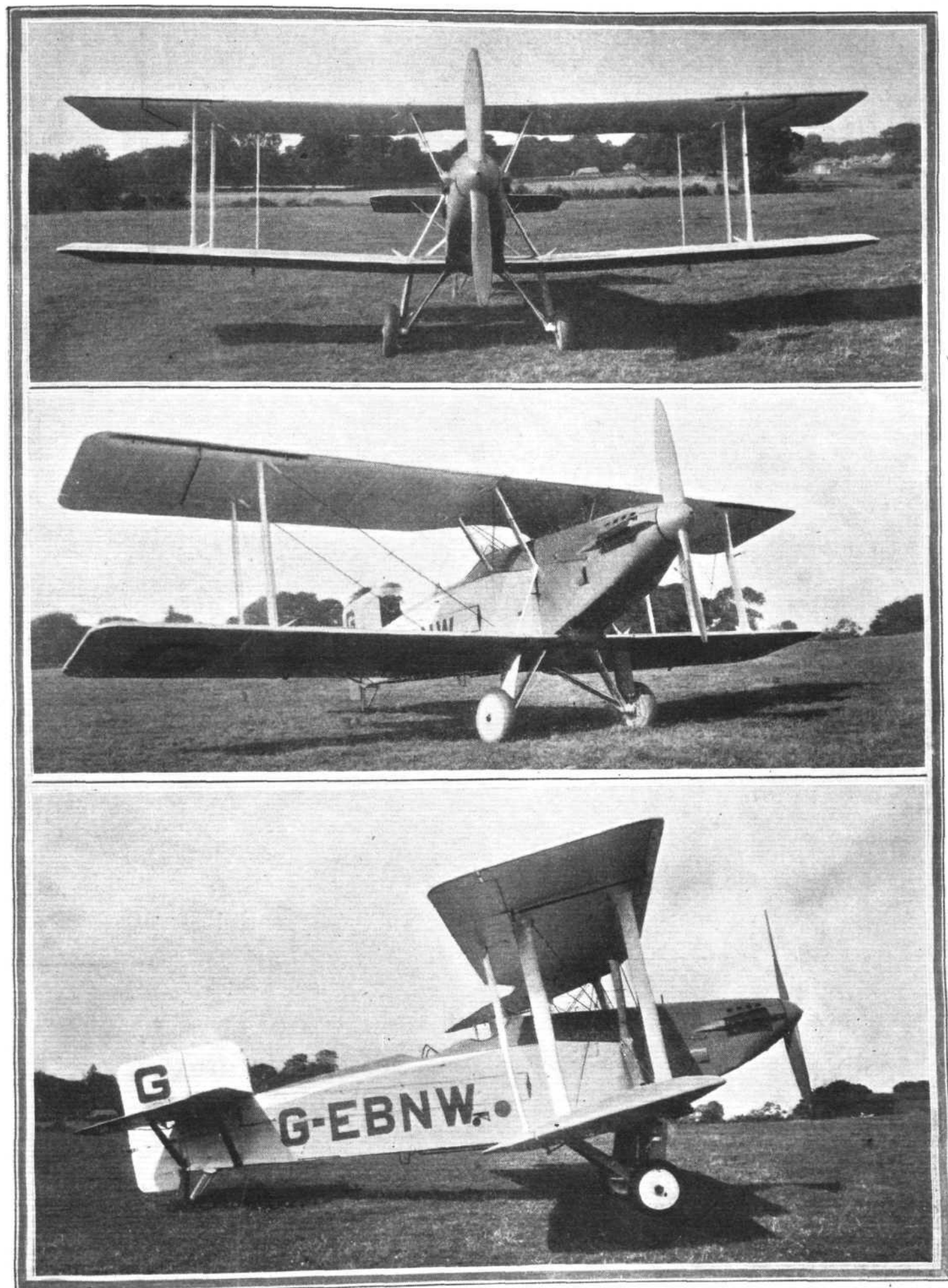
solution of the North-West Frontier problem was civilisation, he said, and the only question was how to get civilisation there. At very great expense the Army had built some roads. It was a question of finance, and in view of the stringent financial conditions we could not at present build more roads. In the circumstances he thought that the Air Force could keep these places under sufficient control. So long as it could be used and maintained air action was successful, but they did not claim that it could take over great tracts of country and civilise them.

France obtains a World's Altitude Record for Seaplanes

THE Fédération Aéronautique Internationale have added to the list of World's Records the altitude record for Class C (seaplanes) with 200 kgs. of useful load recently made by Lieutenant Paris at St. Raphael, when he reached a height of 4,684 metres (15,370 ft.) in a C.A.M.S. seaplane fitted with two Jupiter engines. The total load carried on this record flight was 2,600 kgs. (5,730 lbs.)

An Aerial A.B.C.

A SIGN of the times is the announcement that in March next will be published "The Aerial A.B.C. and Commercial Air Line Gazetteer." This, we understand, will contain particulars of time tables, fares, freightage, rates, distances, air ports, aerodromes and linked motor services, together with a list of agencies and receiving depôts for goods, air-mail rates, passport information, maps, and "everything that the potential user of the air requires to know." The publishers invite all interested to communicate with them at The Aerial A.B.C. Ltd., 4, Duke Street, Adelphi, W.C. 2.



AN AVRO TORPEDO BOMBER : Three views of the "Buffalo II" with Napier "Lion XA." Special features are the extremely "clean" nose and the slot-and-aileron control. The wings are swept back, and are designed to fold. The performance is believed to be very good.



An Aerodrome at 13,000 Feet

SURROUNDED on all sides, and with no outlet to the sea, Bolivia occupies a somewhat peculiar position amongst the South American countries. To the north-west is Peru; to the north, north-east and east is Brazil; to the south, Argentina; and to the west, Chile cuts off Bolivia from the Pacific. That this is a singularly difficult position for a country of such magnitude as Bolivia will be readily understood, and it is thus small wonder that Bolivia is turning her attention to the air, which is, one might say, her only "outlet." There are, however, natural obstacles in the way, of which those unfamiliar with the country cannot well form any idea.

The headquarters of Bolivia's flying are at the Alto La Paz aerodrome, which is situated in the Andes, at an altitude of about 13,000 ft. above sea level, and some 2,000 ft. higher

and nurses in permanent attendance. A Marconi wireless station (telegraphy) completes the equipment.

The present flying stock is reported to include a number of Caudron C.97 machines with 180 h.p. Hispano-Suiza engines, some Morane-Saulnier parasol monoplanes with 130 h.p. Clerget engines, a few Fokker-Hispano machines, and a few Breguet 19 with Lorraine-Dietrich and Hispano engines.

Height is not the only difficulty with which flying in Bolivia has to contend. Extremely strong winds, sometimes as high as 50 m.p.h., and known as the Titicada (after the lake of the same name), are quite frequent, and blow from the north-west. A south-west wind of terrible violence and bringing with it whirlwinds and thunderstorms adds variety, but often makes flying quite impossible. It is stated that, since Bolivian

General View of La Paz, Bolivia:
The Alto la Paz aerodrome is situated on the ridge in the background, at a height of about 13,000 ft.



than the capital, La Paz. For the loan of the photographs which illustrate these notes we are indebted to Capt. Gerald Deane, who has a thorough and extensive knowledge of South America, and who has already done a great deal towards introducing British aircraft into the various South American countries. Bolivia, as we have said, is very much interested in aircraft, but the average sort of machine is of very little use, owing to the situation of the aerodrome at a height where the loss of engine power and lift introduce serious problems in taking off and landing.

The surface of the aerodrome at Alto la Paz is very hard indeed, and is covered with grass and herbs so rough that the metal shoes of the skids fitted on school aeroplanes wear out in a week. At present there are two hangars on the aerodrome, of which one is an old corrugated structure, while a more modern one of concrete has accommodation for about 30 machines. A subterranean fuel reservoir with a capacity of approximately 50,000 galls is part of the equipment, and the air station is further provided with workshops, a laboratory, an engine-testing shop, stores, a medical service with doctors

flying commenced in 1915, no less than 14 pilots have lost their lives in flying unsuitable machines in this neighbourhood. It is, therefore, small wonder that Bolivia is looking around for a type of machine which will meet the unusual conditions, and any British constructor who succeeds in producing the right kind of machine can be reasonably sure of a substantial order.

It should be realised that to turn out a machine with fairly low power loading and very light wing loading is not in itself sufficient, since the machines must have a very good performance in the way of speed, also at lower levels than those of the La Paz aerodrome. A very wide speed range is required, since this is narrowed down at the height at which the machines will habitually have to operate. It is not thought desirable to state in print the exact performance which Bolivia requires, but firms interested are advised to write to Capt. Gerald Deane at 6, Queen Anne's Gate, Westminster, London, S.W.1, who will be pleased to render any assistance required.

If a sufficiently wide speed range cannot be attained with



La Paz, Bolivia:
In the back-
ground the snow-
clad summit of
Mount Illimani,
which rises to a
height of 21,000 ft.

a machine of normal design, it may be necessary to use wing slots so as to attain a high top speed and still retain a reasonably low landing speed at 4,000 m., as well as full control. A supercharged engine would seem to be an advantage also, so as to reduce the loss of power at heights.

The problems are many and difficult, but if Great Britain can succeed in solving them we believe that the effect, not only the immediate one in Bolivia itself, but in South America generally, will be such as to make the trouble very well worth while.

GROUND TRANSPORT FOR AIR ORGANISATION

ON February 2 Flight-Lieut. R. E. H. Allen, A.M.I.A.E., M.I.M.E., gave a lecture before the Royal Aeronautical Society at the Royal Society of Arts on "Ground Transport for an Air Organisation." Col. The Master of Sempill was the chairman. The lecturer said that few people realised that a self-contained organisation for maintaining an air fleet would require more different types of ground vehicles than aircraft. It was highly probable that a civilian air organisation of the magnitude of the Royal Air Force would have fewer types of machines, but to be self-contained and operate in various parts of the world it could not do with many less types of vehicles. If the Empire was linked by air there would have to be bases in wild and uncivilised parts which would have to be fed with stores, although far from road and rail, and repairs would be necessary although not within range of factory or depot. Then the possibility of natives being hostile would have to be guarded against.

The lecturer then dealt with the types of vehicles required for ground organisation. Most of them were inevitably R.A.F. because that force was the only approach to a large self-contained air organisation at present in existence—at any rate in this country. Many of them or similar ones would be needed for civil aviation, although in comparatively smaller numbers, since complete mobility would not be required.

Speaking first of the light six-wheeler the lecturer pointed out that its running costs when carrying 35 cwt. useful load were less than those incurred by the four-wheeler carrying half that load. Its hauling powers were equal to dealing with a trailer having a similar load to its own.

Concerning ambulances, the increase in the size of aeroplanes made it desirable for them to carry at least four stretcher cases. Exhaust gases should not be allowed to escape inside the body, which is liable to happen if the vehicle is open only at the rear.

For dealing with air crashes a lorry equipped with shear legs and a certain amount of tackle and timber had been considered equal to the purpose for some years. But crashes sometimes happened at considerable distances from the roads and this necessitated more modern equipment. It had been met with a four-wheel drive tractor on which a crane had been erected and a long low-loading trailer attached.

For starting engines the Hucks starter continued to give

valuable service. A later type evolved by Messrs. de Havilland and Co. had been mounted on a Ford one-ton chassis.

The increase in the size of aircraft and the petrol carried had also meant improvement in fire-fighting vehicles. A six-wheeled vehicle was now in the experimental stage.

For photography a mobile dark room was desirable and a special body on a standard four-wheeler trailer had been constructed and was tried during the Autumn Exercises. After certain modifications had been done it would be sent to the Middle East.

Wings were not easy stores to transport. Because of this it was hoped that they would not continue to increase in size or, if they did, then in the form of handy sections. A four-wheeled trailer originally designed for Handley-Page wings had to be increased in height for other types. An example of the transport task sometimes necessary was the conveyance of a Supermarine flying-boat to the docks for the Far East Flight. The whole outfit weighed 13 tons 7 cwt. and was over 16 ft. high. A special route had to be surveyed to avoid passing under bridges.

On the question of tank vehicles the lecturer said that one of the problems of which there was not yet a satisfactory solution, was the provision of means for filling aircraft rapidly with perfectly filtered petrol from a mobile tank and at the same time knowing exactly how much petrol had been transferred. Also, time and petrol was wasted when a water-cooled engine had to "tick over" for a quarter of an hour or more before it could be opened out. Easy starting and a rapid "get away" were ensured if radiators could be filled with hot water and oil tanks with hot oil. The lecturer explained a design that met this need.

The moving of large aircraft about aerodromes required some form of tractor, for large bodies of men were not always available nor were they economical. The ideal tractor was one equally efficient on mud, grass, concrete, sand and other surfaces. The best solution so far appeared to be the Kegresse type of tractor without a front axle.

Amongst other types of vehicles for ground organisation dealt with by Flight-Lieut. Allen were those used for workshops, wireless, stores, armament, drinking water and flood-lights. He also gave, in conclusion, some interesting miscellaneous information on the subject.

THE REID REACTION APPARATUS

Picking Out the Qualities that go to make a Good Pilot

Not an apparatus for teaching flying, but an instrument for ascertaining rapidly and at infinitesimal cost whether a man possesses that co-ordination of brain, hands and feet that has been found to be present in all good pilots. That, put as briefly as possible, is the definition of the Reid Reaction apparatus.

It is a fact well known to all that the training of a pilot for service flying is an expensive business. Exactly what is the average cost to the country we have no means of knowing, but it appears probable that the cost will run into several thousand pounds sterling. If, therefore, it were possible to examine a man in some fashion, apart, of course, from the usual medical examination which aims at ascertaining physical fitness and a number of things which have no direct bearing upon the question of whether or not a man is likely to make a good pilot, and to discover whether or not he possessed the qualities which go to make a good pilot, it is to be supposed that a very great deal of time and money could be saved, and incidentally, quite probably not a few lives

The Reid Reaction apparatus has now been under test for quite a long period in this country, and statistics are becoming available. These appear to indicate that, in about 80 per cent. of cases, if a man is going to prove a good pilot, the apparatus will indicate the fact, while, what is at least as important, if a man is never going to be any good as a pilot the apparatus shows the fact, in about the same percentage of cases.

Briefly speaking, "subjects" are classified into three groups, of which, group or class A promises to be a good pilot; class B an average pilot; and class C an inferior pilot. Formerly, it was the custom to divide "subjects" into five groups, but it was found very difficult to draw the boundary lines between so many groups, and the simpler three-group system promises to be quite satisfactory.

The middle group, *i.e.*, group B, is that about which most uncertainty appears to exist. The reason for this is fairly obvious. A man who has been placed in that group as a result of his record on the Reid apparatus may, when he

The Reid Reaction Apparatus: This view shows the complete unit, built up as a section of a fuselage. The person under test sits in a cockpit, and operates controls of normal aircraft type. The reaction chart is produced, by his movements of the controls, by the clockwork motor-driven apparatus on the right, in front of which are the switches, voltmeters and ammeters.



into the bargain. In the Reid Reaction apparatus we seem to have a means of doing this very thing. Starting with the assumption that, given normal physical fitness, the man whose limbs respond most rapidly to the dictates of his brain has the best chances of turning out a good pilot, Squadron-Leader G. H. Reid, D.F.C., has devised a reaction indicator, or rather reaction recorder, which measures the time a man takes to centralise a set of normal aircraft controls from their extreme positions. By means of switches it is possible thus to test a man for "hands," "feet," and a combination of them, in something like 10 mins. Moreover, the actual testing can be carried out by almost anyone after a short period of training. The records so obtained are not, of course, judged by the man who carried out the tests, but by specialists in psycho-analysis. The great advantage of the Reid apparatus is, however, that highly-paid officials need not waste their time over the actual tests, but can concentrate on analysing the results of the tests which have previously been carried out by assistants at trifling cost.

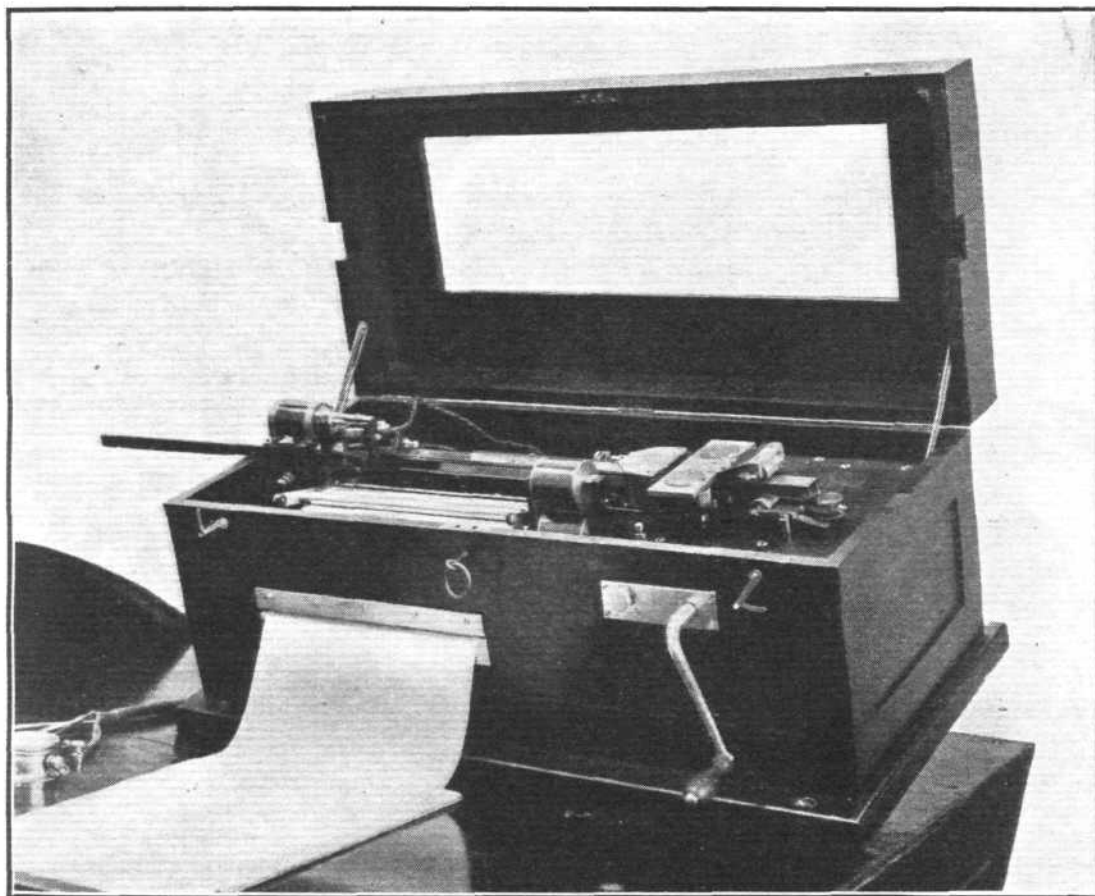
goes to a school for training, either improve or deteriorate. Thus, after his first six months' training, his instructors may class him still B, or may class him A or C, according to whether he has improved or otherwise, or has remained merely a fair average pilot. Thus it is scarcely surprising if the prediction of the Reid Reaction apparatus is likely to be right in a somewhat smaller percentage of cases in that class. This is, however, relatively unimportant. What matters is that in the great majority of cases the apparatus will single out the good man and the frankly bad. It is obvious that this at once reduces the cost of selecting candidates for commissions in the Air Force, not only by discovering at once the men who have the makings of good pilots, but also those who are never likely to become suitable. It is, of course, possible that in a very few instances the apparatus might be the cause of throwing out a candidate who was under some disability at the time of his tests, which caused him to produce curves which were really not a fair example of his normal condition. But it is thought that the percentage of cases in

which that would occur is likely to be so small as to be scarcely worth taking into consideration. And if a candidate should suspect that something of the sort may have happened, he can always be given another test later, when he has convinced himself that he is not handicapped by any worries or anything likely to cause him to produce an unfair record.

We had an opportunity of inspecting the Reid Reaction apparatus recently, when the ease and simplicity with which the tests are made were demonstrated to us in a most convincing fashion. In fact, the writer of these notes was tested by the apparatus, and it is his record which appears on p. 82. It might be pointed out that he has never piloted an aeroplane and that thus he can be accepted as a fair example of the average candidate tested for the R.A.F. The judging of the record had best be left to those more qualified to judge, but Squadron-Leader Reid expressed the view that the record shown would class the candidate in group A. It will be understood that in the selection of candidates, much depends upon our old friend, the law of supply and demand. If there is a plentiful supply of suitable candidates, the records will be selected with greater care, and more candidates placed in class C. It is thought that the long period taken to centralise joy stick and foot bar, shown in the fourth "run," was

in a replica of an aeroplane cockpit, and of the actual recording device, which consists of a clockwork motor driving the mechanism which feeds forward the roll of paper upon which the record is made. A stylographic pen traces, when contact is made, a straight line along the paper, the operation of the aircraft controls breaking the circuit and causing the stylo to leave the paper. Two solenoids serve to return the stylo and place it on the same zero line ready for the next "run."

Inside the cockpit are three sets of small electric lamps. One of these sets of lights is arranged in the form of a semi-circle, the lights on the port side being red and those on the starboard green. For testing centralising the "joy stick" from an extreme position, the candidate is asked to put the stick hard over to the left, for instance, and the man in charge of the test switches on the set of lights in question. The candidate then has to put them out as quickly as possible, and the time taken to do this is measured by the length of line traced by the stylo. Usually ten "runs" are taken for centralising the stick from the left, and ten from the right. In order to prevent the "subject" from flicking the stick upright too suddenly, a mercury level is incorporated in the circuit. Too violent a movement of the stick will set the mercury surging,



The Reid Reaction Apparatus: View of the recording part of the apparatus. A stylo pen traces, when brought in contact with the paper of the record, a line the length of which shows the exact time taken by the "subject" to carry out the particular manoeuvre in which he is being tested. Briefly, what the apparatus does is to show the time taken to centralise the controls from some extreme position. The normal record taken includes centralising the rudder bar from its two extreme positions, the control column from its four extreme positions, and a combination of the two from extreme positions.

due to the "subject" having his attention distracted, and then took about $5\frac{1}{2}$ seconds to "collect his wits" again, and that on a second test this would not be likely to occur again.

The manner in which a candidate recovers after the distraction produced by sounding a Klaxon horn is regarded as an important indication of the powers of co-ordination of the subject. Some men show little effect immediately after the sounding of the horn, and then become very irregular for the rest of the run. Others show a larger effect, but get over it very quickly. As a matter of interest, it should be observed that the time taken to centralise the foot bar is on an average much shorter than that taken in centralising the "joy stick." This is not peculiar to the writer, but is found nearly always to be the case. Also, it is noticeable how a combination of "joy stick" and rudder bar takes longer to centralise than either by itself. Doubtless this is due to the fact that the brain has to divide its attention between the two controls. In actual flying a pilot is presumed to handle the controls instinctively, and presumably a pilot of long experience would show a much better curve than that illustrated.

Turning now to the actual mechanism itself, this consists, as we have said, of a set of normal aircraft controls, mounted

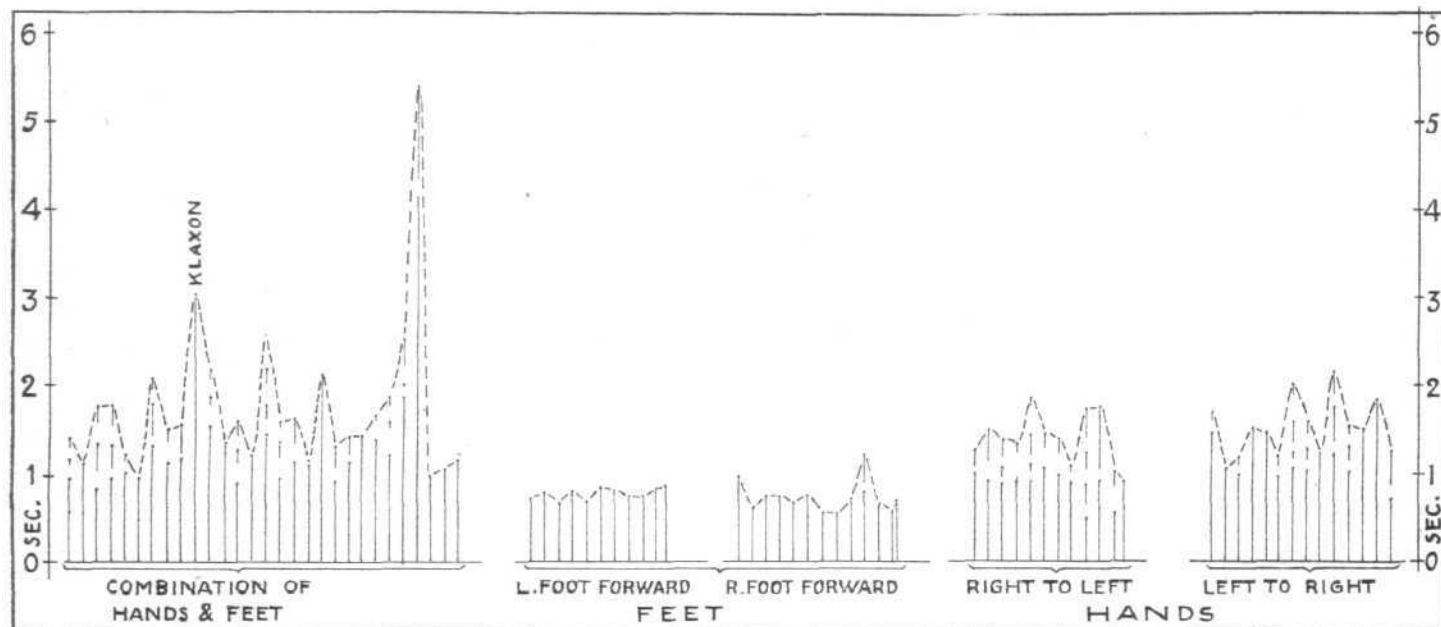
and it will "overshoot the mark." For instance, if the test is centralising from the left, and the stick is brought upright with a jerk, the red lights will be extinguished, but the surging of the mercury will then light the first two or three of the green starboard lights. In returning, the mercury will extinguish these and will light one or two of the red lights on the port side. Repeating the process in the course of settling down, the mercury will swing from side to side, until finally coming to rest, with all lights extinguished. The record of this happening will show as a series of dots.

The foot bar has a contact which works in conjunction with a series of horizontal lights, and again, test runs of 10 or so for each foot forward are usually made, the principle being the same, and the foot bar lights being brought into action by a second switch. Near the starboard side of the cockpit is a vertical row of lights connected up to the "joy stick" so as to be extinguished by a forward and backward movement of the stick. These are connected to a third switch, and the man in charge of the tests can switch on in turn and separately the foot bar, the stick for lateral movement, and the stick for fore and aft movement, or all three together for taking combined readings.

Current is supplied from a small accumulator for use where no electric supply is available, but if the apparatus is to be

used at an air station where already electric light is being used, the current can be taken from the house circuit. Thus the "running cost" is extremely small, and for service purposes may be regarded as negligible. As a candidate can be tested in something like 10 minutes, a very large number of records can be taken in a working day, and the study and judging of the records done by qualified psychologists at their leisure.

stunting at a low height. That, obviously, the Reid apparatus cannot foretell. But that is a thing which will very quickly be discovered by the flying instructors, and if a man is not capable of being persuaded to desist, he can, should such action be desired, be dismissed. That the apparatus will, in a very large percentage of cases, single out the really good and the really bad is quite certain, and the Reid Reaction apparatus deserves a very wide use, not only at home but in all countries where



THE REID REACTION APPARATUS : Reproduction of a fairly typical record obtained with the Reid apparatus. It should be explained that the record is read from right to left, the first "run" being a test of centralising the control stick from the extreme left position, the next from the extreme right position. Then follows centralising the foot bar, first with the right foot forward, then with the left foot forward. On the left is the chart of a series of "runs" for testing the combined centralising of foot bar and "joy stick." It will be observed that the "subject" centralised the controls fairly rapidly in the first three "runs." Then evidently he became confused, and in the fourth took nearly $5\frac{1}{2}$ seconds to centralise both controls. When the Klaxon horn was sounded the effect was to cause him to take longer again, but subsequent runs show that he soon got over the effect of the Klaxon, and the curve tends to become fairly steady once more.

There can, we think, be no doubt that in taking for his basis the co-ordination of brain, hands and feet, Squadron Leader Reid has hit upon the essential qualifications. The apparatus does not teach a man to fly, nor does it show whether a man is an utter fool in the matter of taking unnecessary risks. For instance, a pilot may have perfect co-ordination. His records may show him capable of centralising the controls in a very short space of time and yet he may be given to

the selection of candidates for the flying services is a matter of moment. By its use a very great deal of time and expense will undoubtedly be saved.

All enquiries concerning the machine should be addressed to:—

Reid & Sigrist, Ltd.,
Athenæum Works,
The Vale, Hampstead, London, N.W.

The Royal Air Force Memorial Fund

The usual meeting of the Grants Sub-Committee of the Fund was held at Iddesleigh House on January 26. Lieut.-Commander H. E. Perrin was in the chair, and the other members of the committee present were:—Mrs. L. M. K. Pratt-Barlow, O.B.E., Sqdn.-Leader Douglas Iron, O.B.E. The committee considered in all 16 cases, and made grants to the amount of £205 1s. 4d. The next meeting was fixed for Thursday, February 16, at 2.30 p.m.

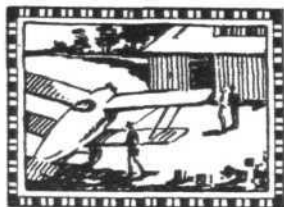
The Napier-Campbell Car

CAPT. MALCOLM CAMPBELL'S Napier car, with which he is to make attempts upon the world's speed records at Florida on February 23, has been much influenced by aeronautical design. It is fitted with the Napier racing aero engine, which develops 850 h.p. The body design has been determined after a series of wind tests on models carried out by Mr. R. K. Pierson, Chief Designer of Messrs. Vickers and Co. Detachable fins have been fitted at the tail which will give greater directional stability, as, should the car skid violently, the wind pressure at high speed will tend to keep it straight. The wheels have been faired off, and there are no projections on the car whatever. Two fore-and-aft radiators have been fitted, between the wheels and the body on either side. These were designed and constructed by the Fairey Aviation Company. The tyres are of special design by Messrs. Dunlops.

The Armstrong Siddeley Development in Canada

By the association of Armstrong Siddeley Motors, Ltd., and Sir W. G. Armstrong, Whitworth Aircraft, Ltd., with the Ottawa Car Mfg. Co., plans have been laid for the assembly of Armstrong Siddeley aero engines and aircraft in Canada, the Armstrong Siddeley Co. being the first British concern to build its own engines in the Dominion. The Ottawa Car Mfg. Co. is a subsidiary of the Ottawa Electric Co., which not only supplies Ottawa with electric power, but also manufactures fittings on a very large scale. The Ottawa Car Mfg. Co. became prominent during the war in the manufacture of field guns and now makes the street cars used in Ottawa. Their offices are among the most stately buildings in the City, while their works, part of which are now devoted to the storing, complete overhauling, dismantling and rebuilding of Armstrong Siddeley aero engines, are splendidly equipped. A mile away on an island in the middle of the Ottawa river and close to the R.C.A.F.'s own Testing Plant, test beds for Armstrong Siddeley engines are being laid down and will enable the servicing of the Jaguars for the Government's Siskins and Atlases to be undertaken most expeditiously. Technical experts from Coventry, service men and plant to enable the large number of engines in use to be efficiently maintained have been sent out, this plan closely following the lines on which the care and maintenance of service machines is carried out in Coventry.

PRIVATE



FLYING

A Section of **FLIGHT** in the Interests of the Private Owner, Owner-Pilot, and Club Member

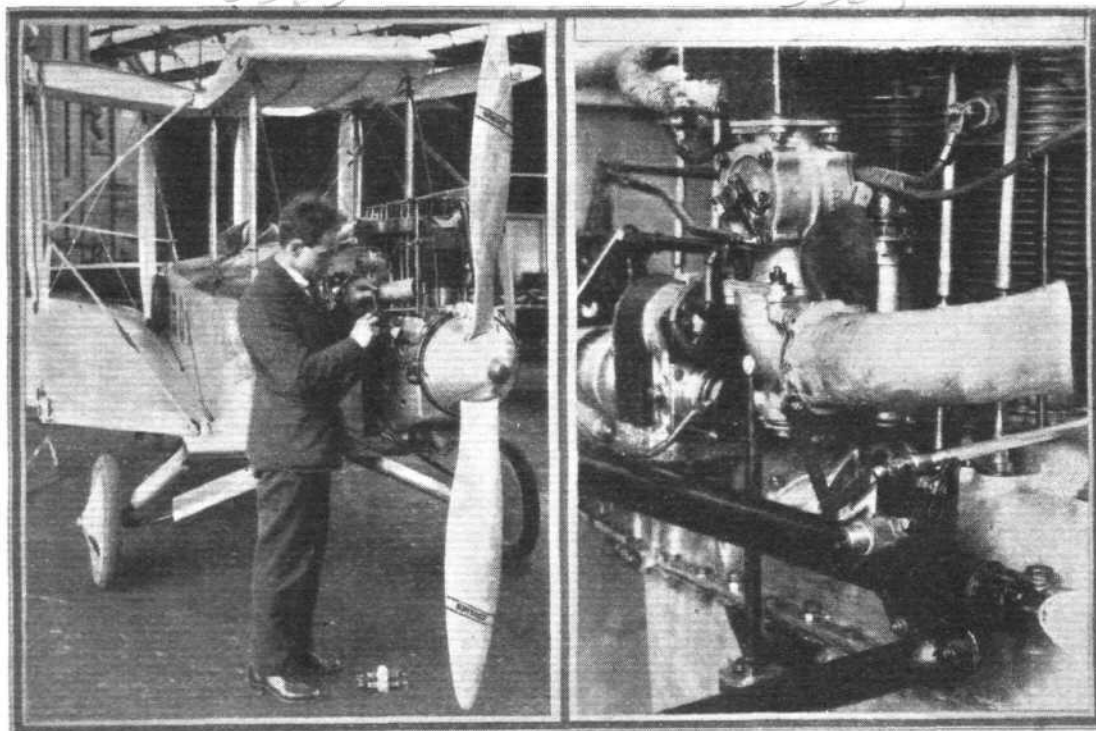
BY "AVIAN" TO THE ANTIPODES

"Bert" Hinkler's Great Attempt

By the time this week's issue of **FLIGHT** reaches our readers it is more than likely that Bert Hinkler will have covered the first stage of the great flight which he is undertaking in his Avro "Avian" G-EBOV, A.D.C. "Cirrus" engine. Starting from Croydon aerodrome, he will head south for France and Italy, across the Mediterranean, along the coast of Africa, and onward by the desert route to Baghdad, Karachi, and the usual route via the East Indies to Australia, his native country. A great deal has been made, in the general press, of the fact that Hinkler will make the journey in a series of flights of 1,000 miles each. This is rather to be regretted,

many years ago) his reputation would not suffer should the fates be unkind. On the other hand, if anyone can do it Hinkler can.

It is only necessary to be with Hinkler for a very short time while he is going over his "Avian" to realise the inventive turn of mind which has found expression in a dozen little ways on G-EBOV. The Hinkler undercarriage is one of these "brain waves." A little vice mounted on one of the engine bearers is another. The "K" jury struts which fold into the wings when not in use are a third. The special union on the petrol pump, which will enable him to sit in the



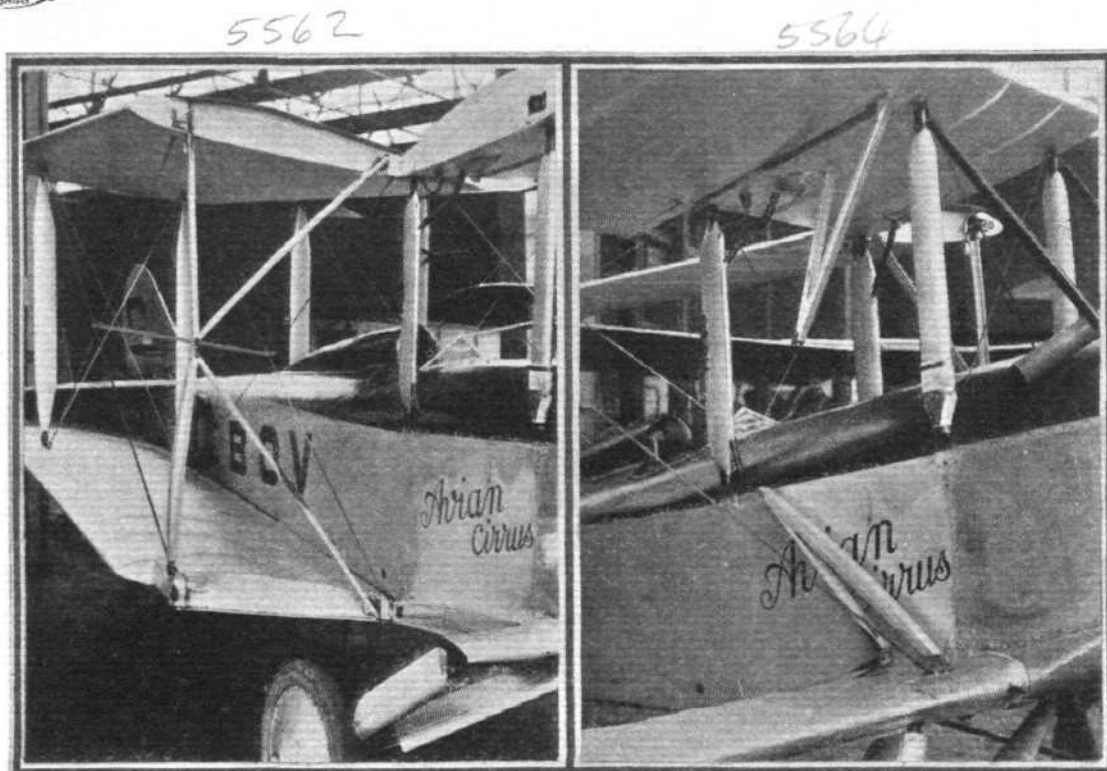
["FLIGHT" Photographs

HINKLER'S FLIGHT TO AUSTRALIA: On the left, the "Great Little Man" is seen at work on his engine. On the right a "close-up" of the special vice Hinkler has made. This fits on an engine bearer, and enables work, such as adjusting a tappet rod or dismantling a sparking plug, to be carried out with convenience. The short air intake pipe has, where it joins the carburettor a "choke plate" which Hinkler uses for starting, in place of the usual rag. The "Avian" bristles with special "gadgets" thought out by Hinkler.

as it will tend to give the flight the appearance of a sort of record-breaking attempt. While naturally Hinkler will not dawdle along more than he can help, it should be realised that in a small low-powered machine like the "Avian" it is somewhat problematical whether such a time table can always be adhered to. True, with the large tank fitted in the space previously occupied by the front cockpit, the "Avian" will probably have a range in still air of well over 1,000 miles, but on a flight of this nature, with the possibility of meeting adverse weather conditions, it is always likely that delays will occur. If Hinkler should succeed in making very good time, so much the better, but to advertise it as a foregone conclusion that he *will* do so seems rather a pity. His determination and grit will doubtless carry him through many difficulties, but even Hinkler cannot do the impossible. If he can get to Australia in three weeks or a little under, he will have done wonders. If he should be compelled to take longer, small blame to him. As the pioneer, so to speak, of long-distance flights on a low-powered machine (London-Turin and Sydney-Bundaberg non-stop in the Avro "Baby"

cockpit and fill his tank from a large can of petrol on the ground is yet another. And so one could go on.

The "Avian" used by Hinkler in this flight is his old Lympne machine, and differs in several respects from the standard production "Avian." For instance, the wing section used is one of the bi-convex type (R.A.F. 28, we believe), which has a very small movement of the centre of pressure, and Hinkler says it makes the machine very nice to handle in bumpy weather. Especially when coming in to land, when there is an absence of "ballooning." As used on this flight, G-EBOV is a single-seater, the space usually occupied by the passenger being filled by a large petrol tank. From this the petrol is pumped up into the top centre-section service tank, itself divided into two compartments with a capacity of 10 gallons each. By running on one of these while pumping petrol into the other, it will always be possible to know exactly how much petrol is left on board. The tanks have been so arranged that their outlet "Petroflex" tubes do not leave the sumps at the extreme lower point, but at a point slightly higher, so that any

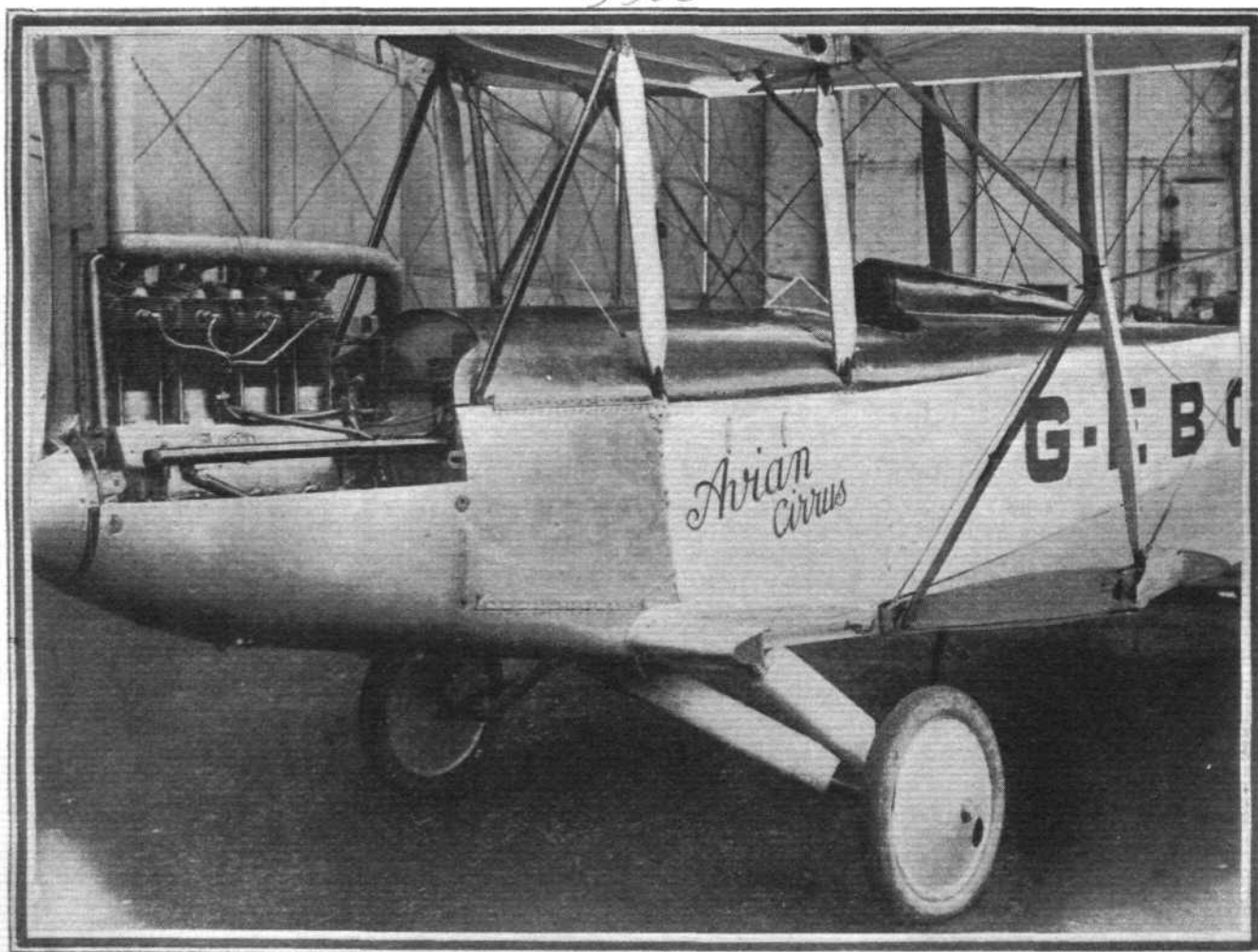


HINKLER'S FLIGHT TO AUSTRALIA : Two views of the special "K" type jury strut used by Hinkler for folding the wings of his "Avian". The photograph on the left shows the "K" strut in place, while on the right it is seen partly folded. A single bolt in the centre is undone, and the two halves of the "K" strut then fold into lower and upper wing respectively, where they are housed in slots in such a way as to fair in with the wing surfaces.

sediment will drain below the outlet instead of being permitted to go to the carburettor and possibly cause trouble.

On some of his previous flights in small machines, Hinkler

had some considerable difficulty in refuelling from large cans. It is no joke lifting a 5-gallon can up to the level of the top plane tank, and on G-EBOV Hinkler has made provision for



HINKLER'S FLIGHT TO AUSTRALIA : This view of the "Avian" with wings folded gives a good idea of the way in which Hinkler's special type of undercarriage lowers the front of the machine and makes the "Cirrus" engine very accessible. Also the wheels move aft and relieve the tail skid of nearly all its load.

[" FLIGHT " Photographs]

refuelling single-handed should this be necessary anywhere. His petrol pump is placed on the floor of the cockpit, near the starboard side. Normally the main petrol tank can be filled through the deck fairing, but an extra union on the pump will enable the pilot to do the work himself by attaching a length of "Petroflex" tubing to this union, the free end of the tube going into a petrol can on the ground, and the pilot working the pump from his seat. It may be that this arrangement will never be required, but it is there if wanted.

Having found that very often the adjustment of some small part such as a sparking plug or a valve tappet rod is an awkward business if there is no fixed vice available wherein to hold the parts, Hinkler has devised a neat little vice which clamps on to one of the engine bearers. It weighs nothing, takes up no room, but may prove a very handy piece of equipment. In one of our photographs Hinkler is seen working at it. The upper part fits the nuts of the "Cirrus" tappets, while the lower accommodates a sparking plug.

Easy starting is a great asset at any time, and especially so on a flight of this nature. In place of the usual rag put into the air intake to act as a "choker," Hinkler has fitted a small metal plate, hinged to one of the nuts of the pipe union. Sliding this plate across the orifice is a much neater affair than messing about with a rag, and Hinkler says the "Cirrus" starts off first swing, even when very cold.

Jury struts are a necessary evil in machines with folding wings. If carried loose in the machine they are apt to get lost, or shaken about and getting into unwanted places. So Hinkler has rigged up some jury struts of Duralumin channel sections. They are in the form of a letter "K," and when the wings are spread, a single bolt in the centre of the "K" is undone, when the two halves of the "K" fold into slots in upper and lower wing respectively. Pieces of wood attached to the channel sections are shaped to fit the wing curvature, so that in flight the surfaces remain smooth and unbroken.

We have previously referred to the special type of undercarriage invented by Bert Hinkler. This is of the divided type, with a pyramid, or rather a tripod, on each side. As the wings are folded, the rear undercarriage strut, which is hinged to the lower wing, moves back with the wing, and in so doing takes the wheel with it. One result is that as the wheels move back, the load on the tail, due to the weight of the folded wings, is greatly relieved, and one man can easily wheel the machine about. There is a second advantage due to the fact that the wheels, in moving aft, lower the fuselage a good deal. Consequently, when the tail is raised, either on a trestle if in a shop, or on a hedge or similar natural support if in the field, the engine comes down very low and is extremely accessible. Rockers, valves and top hamper generally can then be easily reached, and are thus much more likely to receive due attention than if they are just out of reach and "too much trouble." Our photographs bring out this point rather clearly. Yet another advantage of the Hinkler undercarriage is that it gives a wide track, so that the machine can be taxied about in a strong wind without risk of it blowing over.

The reliability of the "Cirrus" is now such that there is not much risk of a forced landing, but "just in case," Hinkler has had a large fairing added to the fuselage behind the cockpit, and inside this fairing is a collapsible rubber boat which, if he can get it out and inflated in time, should keep Hinkler afloat for many hours in case of a forced descent on the sea.

Just as we are about to go to press, news comes through that Hinkler started from Croydon aerodrome at 6.48 a.m. on Tuesday, February 7, and in unbroken flight he reached the Centocelli aerodrome at Rome on the evening of the same day, at 8.45 p.m., having covered something like 1,100 miles non-stop. He left Centocelli aerodrome the next morning at 9.15 "southward bound," but at the time of closing down for press, we have no news of his further movements.

LIGHT 'PLANE CLUBS

London Aeroplane Club, Stag Lane, Edgware. Sec., H. E. Perrin, 3, Clifford Street, London, W.1.

Bristol and Wessex Aeroplane Club, Filton, Gloucester. Secretary, Capt. C. F. G. Crawford, Filton Aerodrome, Patchway.

Hampshire Aero Club, Hamble, Southampton. Secretary, H. J. Harrington, Hamble, Southampton.

Lancashire Aero Club, Woodford, Lancs. Secretary, C. J. Wood, Oakfield, Dukinfield, near Manchester.

Midland Aero Club, Castle Bromwich, Birmingham. Secretary, Maj. Gilbert Dennison, 22, Villa Road, Handsworth, Birmingham.

Newcastle-upon-Tyne Aero Club, Cramlington, Northumberland. Secretary, A. H. Bell, c/o The Club.

Norfolk and Norwich Aero Club, Mousehold, Norwich. Manager, F. Gough, The Aerodrome, Mousehold, Norwich.

Nottingham Aero Club, Hucknall, Nottingham. Hon. Secretary, Cecil R. Sands, A.C.A., Imperial Buildings, Victoria Street, Nottingham.

The Scottish Flying Club, 101, St. Vincent Street, Glasgow. Secretary, Harry W. Smith.

Suffolk Aeroplane Club, Ipswich. Secretary, Courtney N. Prentice, "Hazeldeil," Stowmarket, Suffolk.

Yorkshire Aeroplane Club, Sherburn-in-Elmet, Yorks. Secretary, Lt.-Col. Walker, The Aerodrome, Sherburn-in-Elmet.

LONDON AEROPLANE CLUB

REPORT for week ending February 5, 1928.—Total flying time, 13 hrs. 15 mins. Dual instruction, 6 hrs. 40 mins.; solo flying, 5 hrs. 15 mins.; passenger flights, 1 hr. 20 mins.

Dual instruction (with Capt. F. G. M. Sparks): Miss Spooner, H. Kennedy, G. C. Gotheridge, G. W. Hall, Miss Johnson, G. Eady, C. E. Murrell. (With Capt. S. L. F. St. Barbe): G. Eady, E. M. Alexander.

Solo flying: R. Sanders Clark, H. Solomon, A. F. Wallace, J. J. Hofer, C. E. Murrell, G. W. Hall, E. C. T. Edwards.

Passenger flights (with Capt. S. L. F. St. Barbe): Miss V. Cholmondeley. (With Capt. F. G. M. Sparks): Miss H. Cholmondeley.

Flying return for the month of January.—Dual flights, 21; 8 hrs. 45 mins. Solo flights, 33; 14 hrs. 30 mins. Passenger flights, 6; 1 hr. 50 mins. Test flights, 18; 3 hrs. Total, 78 flights; 28 hrs. 5 mins.

The January return shows the worst month since the Club has been in existence.

We have now completed six months' flying under the revised Subsidy scheme, and, comparing this with the same period last year, there is a falling off of nearly 300 hours' flying time, due entirely to the weather conditions during the last four months. It is hoped these conditions will improve, and so enable the club to make up a little of the lost ground.

BRISTOL & WESSEX AEROPLANE CLUB

REPORT for week ending February 4.—Total flying time, 10 hrs. Instruction, 5 hrs. 5 mins.; solo, 3 hrs.; passengers, 1 hr. 55 mins.

Under instruction: Messrs. Bathurst, Greenhill, Arnold, Hall, and Maj. Hume.

Soloists: Messrs. Bathurst, Downes-Shaw, Arnold, and C. E. Pitman.

Passengers (with Mr. Bartlett): Dr. H. S. Hele-Shaw, F.R.S., and Mr. H. F. Tiarks. (With Mr. E. Hopper): Mrs. Aspinall.

On Monday, January 30, we had the pleasure of a visit from Dr. H. S. Hele-Shaw, F.R.S., whose 73 years of age did not prevent him from thoroughly enjoying a flight in a "Moth" with Mr. Bartlett over the City and docks.

HAMPSHIRE AEROPLANE CLUB

REPORT for week ending February 5.—Total flying time, 10 hrs. Instruction, 8 hrs. 15 mins.; solo, 35 mins.; passenger flights, 50 mins.; test flights, 20 mins.

The following members had instruction with Flight-Lieut. Swoffer:—Mrs. Ranald, Hon. H. R. Grosvenor, Lieut. Musslewhite, Flying Officer Southey, Capt. Kirby, Messrs. Cripps, Watson-Taylor, Shepherd, Southcliffe,

Lowe-Wilde, Wells, Heath, Fawkes, Baynes, Bowen, Curtis-Nutall, Parker, Falconer, and Puttock.

The soloists were Mrs. Ranald, Flying Officer Southey, Lieut. Musslewhite, Messrs. Bowen, Cripps, and Falconer.

We commenced this week with a new instructor, a new ground engineer, and a new aeroplane.

Taking them in the order named, our new instructor, Flight-Lieut. Swoffer, arrived on January 25 in our new Avro "Avian" G-EBVI, which he had brought down from Manchester for us. Flight-Lieut. Swoffer has just left No. XI Bombing Squadron of the R.A.F., where he was instructor of the "Ab initio" flight. He joined the R.F.C. in 1916 and remained on in the R.A.F. until 1919. After a sojourn in Africa, he rejoined the R.A.F. and went to the C.F.S. as instructor in 1923. In August, 1926, he was posted to No. XI Bombing Squadron.

Mr. E. Lenny, our new ground engineer, is also an ex-R.A.F., having served from June, 1921, to December, 1925, at home and in Palestine. After leaving the R.A.F. he joined the De Havilland Aircraft Co., and left this firm to come to us at Hamble.

Lastly, our new aeroplane. As previously mentioned, this is an Avro "Avian" and is proving very popular with the members, two of whom, Capt. Kirby and D. A. R. Cripps, have carried out on it the qualifying tests for their R.A.C. licence.

LANCASHIRE AERO CLUB

REPORT for week ending February 4.—Total flying time, 3 hrs. 5 mins. Instruction, 1 hr. 15 mins.; solo flights, 50 mins.; tests, 1 hr.

Instruction with Mr. Baker: Mr. Gort.

Pilots: Messrs. Lacayo, Twemlow, Meads.

The past month has been the worst in the history of the club, so far as flying hours go. Largely the weather has been to blame, but crashes and engine troubles towards the end of last year have also played their share. By the middle of this month we hope to have our full fleet serviceable once more and, with five members waiting to do their first solo, we hope to make quite a hole in the Treasury's pocket.

Two new arrivals on the staff this week. Capt. Baker, M.C., A.F.C., took charge as chief instructor and aerodrome manager on Wednesday, while the following day Mr. Howard Pixton joined the ground staff. Two valuable "captures," as they say in League circles. (Transfer fees not disclosed.)

Miss W. Brown, back from her Australian tour with the English ladies' Hockey team, has added to the ranks of our private-owner members by purchasing a new Mk. III Avian this week.

We offer our deepest sympathy to the Yorkshire Club in connection with their accident on Sunday.

MIDLAND AERO CLUB LIMITED

REPORT for week ending January 5.—Total flying time, 3 hrs. 35 mins. Dual (with Capt. McDonough): Messrs. H. Lattey R. Brinton, and E. Wynn.
Solo: Messrs. G. Perry and R. Brinton.
Flying was only possible on two days owing to rain and gales.

NEWCASTLE-UPON-TYNE AERO CLUB

REPORT for week ending Sunday, February 5, 1928.—Total flying, 16 hrs. 30 mins. Instruction, (Mr. Parkinson), 6 hrs. 25 mins. Solo training, 30 mins. "A" pilots, 7 hrs. 30 mins. Tests, 50 mins. Passenger, 1 hr. 15 mins.
The following flew under instruction: Miss Rambaut, Miss Klyver, Messrs. De Pledge, Griffiths, Horn, V. Heaton, Glenny, Hayton, Dr. Alderson.
Advanced dual: Mrs. Heslop, Mr. De Pledge.
Soloists: Mr. De Pledge, Mr. Glenny.
"A" Pilots: Mrs. Heslop, Messrs. H. Ellis, Wilson, Turnbull, R. N. Thompson, C. Thompson, Matthews, Dr. Dixon.
Passengers (with Dr. Dixon): Miss Howison, Dr. Davidson. (With Mr. R. N. Thompson): Mr. Fairless, Mr. Walker. (With Mr. H. Ellis): Mr. Pollock. (With Mr. C. Thompson): Mrs. Heslop, Mr. Luckman, Miss Bulmer. (With Mr. Parkinson): Mr. Ramsay, Mr. Oakes, Mr. Nash.

NORFOLK & NORWICH AERO CLUB

FLYING report for week ending February 5.—Total flying time, 9 hrs. 15 mins.
Instruction with Capt. Lines: Messrs. H. Mack, N. A. Lindley, E. Varden Smith, G. Surtees, A. G. Barratt, N. Brett, A. Cooper, and G. Barker.
Soloists: Messrs. R. T. Harmer, W. P. Cubitt, W. A. Ramsay and H. Pank.
Passengers: Mr. G. Watson Parker.

An informal meeting of the members is to take place on Thursday, February 23, at 8 p.m., at the Royal Hotel and it is important to note that Air Vice-Marshal Sir Sefton Brander, K.C.B., Director of Civil Aviation has very kindly promised to come down and address us, on aviation generally which is sure to be extremely helpful and interesting. After Sir Sefton's address the meeting will merge into a smoking concert, details of which will be forthcoming later.

On Thursday the Club was honoured by a visit from Lady Bailey, Mr. Courtney Prentice and Dr. Sleight, of the Suffolk Club, to discuss important matters relating to the Air League Challenge Cup Race. (These two gentlemen by the way, informed us they have recently acquired some new-fangled machines called "Wheel back Chairs" we don't know anything of these, but presume they will soon be flying over in one of them to see us.)

Next Wednesday, Squadron Leader Rea has very kindly consented to address a meeting of members in the Club House on General Flying. This should be very helpful especially to flying members. He is prepared to answer all sorts of awkward questions and should have a busy time.

Commercial flying: Under this heading we have an interesting announcement to make. A Lowestoft gentleman has asked for a quotation to be flown to Germany and back, and a definite price has been quoted. There is every reason to think it will be accepted. (We remember the time very well when one was flown there free of charge and the ticket did not always include return fare.)

The Club is indebted to Mr. L. C. Ottoway for the kind presentation of an old Jacobean armchair for use in the Club house.

We are pleased to welcome the Right Hon. the Viscount Elmley prospective Liberal Candidate for East Norfolk as an active member of the Club and six others who joined this week. (Not all prospective members of course.)

NOTTINGHAM AERO CLUB

REPORT for week ending January 27.—Total flying time, 10 hrs. 50 mins. Dual, 5 hrs. Solo ("A" licence), 2 hrs. 5 mins. Solo (under instruction), 2 hrs. 35 mins. Tests, 35 mins. Passenger flights, 35 mins.

The Flight to India

On January 9 Capt. Neville T. Stack, A.F.C., gave a lecture on his flight to India before No. 601 (County of London) Bombing Squadron, of which Lord Edward A. Grosvenor is Squadron Leader. The lecture was much appreciated.

A New Test Pilot

CAPT. A. M. BLAKE has been appointed as pilot to the Blackburn Aeroplane Company. His duties will largely consist of demonstrating the Blackburn "Bluebird II." Last year he piloted Mr. Charles Blackburn on air tours in this country in the "Bluebird." Capt. Blake is an aeronautical engineer as well as a pilot and since 1912 he has been continually engaged in flying both as an Air Force Officer and as a commercial pilot. For many years the Blackburn test pilot was Mr. R. Kenworthy, and in more recent years the late Sqdn.-Ldr. W. Longton always flew the company's "Bluebird" at air meetings.

Light Aeroplane Show at Folkestone

THE new Cinque Ports Flying Club which incorporates the East Kent Flying Club has arranged a show of light aeroplanes which will be held in the Folkestone Drill Hall between March 28 and April 4. It is hoped to display four types of machines. The charge to the public will be 6d. each visitor. The show will be held daily (excluding Sundays) from 2 p.m. to 9 p.m. A public meeting will be held on the last night, and following this, a demonstration will take place at the Lympne Aerodrome on April 7.

Yorkshire Club's Loss

MR. ALBERT CRITCHLEY, a qualified pilot and a member of the Yorkshire Aeroplane Club, was killed whilst flying at the Club's aerodrome at Sherburn, Yorkshire, on February 5. He was flying the Blackburn "Bluebird" alone and suddenly nose-dived. Mr. Critchley had served in the Royal Air Force and was on the Reserve.

Passenger flights (with Mr. Martin): Messrs. Granger, Blake and Hancock (With Mr. Wilcox): Messrs. Walter, Stevenson, Trunk, Bratt, and Red-house.

Dual instruction (with Mr. Martin): Messrs. Granger, Glenn, Pilgrim, Ashworth, Hancock and Stevenson.

Solo ("A" Licence): Mr. J. H. Wilcox. Solo (under instruction): Messrs. Cox, Whitby, Blake, Hallam and Sands.

We are still suffering from rather a lot of bad weather and most of the flying this week (apart from 10 hrs. or so) has been done in the "Yew Tree." Blake did half his test in excellent fashion, but wanted to do it again because he didn't get nearer than 10 ft. to the mark. With luck he may get his height test done by the end of June. We notice a craving for athletics in a certain club, but if they want a little spontaneous sport we have a horse on the strength that was apparently reared on "This Freedom" and pink gin, and when he once gets clear of the gates, which he does as soon as they are opened, he is a real good miler. By the way, has anyone seen a Moth doing the 100 yards on its own? Our club staff have, and it took them quite a long time to repair the hole in the starboard wing.

REPORT for week ending February 3.—Total flying time, 8 hrs. 10 mins.; Dual, 4 hrs. 15 mins.; solo ("A"), 55 mins.; (under instruction), 1-hr. 35 mins.; passenger, 55 mins.; tests, 35 mins.

Dual instruction (with Mr. B. Martin): Messrs. Stevenson, Ashworth, Granger, Pilgrim, Walter and Austin.

Solo ("A" Licence): Mr. Wilcox. Solo (under instruction): Messrs. Whitby, Hallam, Cox and Blake.

Passengers (with Mr. Martin): Messrs. McKay and Dickson. With Mr. Wilcox: Messrs. Florence, Jewsbury and Dickson.

SUFFOLK AEROPLANE CLUB

REPORT for week ending February 5.—Flying time, 7 hrs. 40 mins. Instruction (with Mr. Lowdell): Miss Edwards, K. Peck, H. Billington, F. Verney, R. Brown.

Soloists: Dr. Jas. Sleight, S. Schofield, C. N. Prentice.

On Thursday, Dr. Sleight and Mr. Prentice flew over on the club's "Bluebird" to Norwich to discuss arrangements for the Air League Challenge Cup race.

Capt. Blake arrived at Hadleigh Aerodrome on Friday, flying "Bluebird" G-EBRE, which has recently been reconditioned by the makers. This machine is now fitted with adjustable rudder bars, also an exhaust ring which is a vast improvement.

Mr. Prentice successfully passed his tests and secured his "B" licence this week.

YORKSHIRE AEROPLANE CLUB

REPORT for week ending February 4.—Flying time: 4 hrs. 50 mins. Instruction: 1 hr. 35 mins. Soloists, 2 hrs. 40 mins. Passengers: 35 mins.

Instruction (with Captain Beck): Messrs. Little, Yeomans, Sugden, Balfour, A. Crowther.

Soloists: Messrs. Ellison, Critchley, A. Crowther, H. Crowther.

"A" Licence pilots: Messrs. Thomson, Wood, Lister.

Passengers (with Captain Beck): Miss Walker, Mr. Cope.

We refuse to give any excuse this week, we are sick of repeating ourselves.

Mr. and Mrs. Brackenbury paid us a visit on their return from Switzerland only to leave us the next day for Mr. Brackenbury to take up his duties with a garrison in Plymouth. Everybody will regret that it has been found necessary to post him more or less permanently to a station so far away from the Yorkshire Aeroplane Club, of which he was such an ardent supporter.

On Monday, Mr. Beck gave an address in Doncaster on "Civil Aviation" at the Rotary Club, and on Tuesday, on "The Light Aeroplane Movement," at the "U and I" Club. On Thursday, Mr. Ely addressed the "19" Club on "Modern Aircraft and its Uses." A certain amount of publicity was given in the local press so that from further efforts of this description we hope to enroll a few more members. Our membership at the moment consists of the following: 140 full flying members; 57 associate members; 27 lady members 17 honorary members.

Stockholm Flying School

IN the presence of members of the Government a civil flying school was opened at Stockholm on January 31. There are 22 pupils, 3 instructors and 3 D.H. "Moths." Similar schools may start at Gothenburg and Malmo.

"Cirrus" Engines for Italy

ITALY is holding a competition for light seaplanes in the summer and for this purpose an order for "Cirrus" engines has been placed with the A.D.C. Aircraft Co., Ltd.

Hull Declines

SUCCESS has not attended the efforts to form a light aeroplane club in Hull and the proposals have therefore been abandoned. The subscriptions already made, including £100 from Sir Charles Wakefield, are being returned. With the Blackburn Aeroplane Company's well-equipped aerodrome at Brough, ten miles away, at its disposal, the town had a good start.

Aerial Honeymoon

MR. ART FOWLER, whose name appeared in our recent additions to the Private Owners' List, is the well-known cabaret artist. He was recently married and spent his honeymoon on an air trip to France in his own D.H. "Moth."

Flying at Oxford

THE ban on Undergraduates at Oxford to stop them flying has been lifted, and the University Squadron is now flying at the Upper Herford aerodrome, 12 miles north of Oxford. They have three Avro-Lynx machines supplied by the Air Ministry, and ten pupils receive instruction a day. No solo flying is allowed, whether a pupil has his certificate or not. He may only fly with an instructor. No passengers may be flown except members or prospective members of the Squadron. The chief instructor is Wing-Commander A. G. R. Garrod. The total cost to a pupil is only £1.

AIRISMS FROM THE



FOUR WINDS

African Survey Flight

SIR ALAN COBHAM made the first flying-boat descent on Lake Victoria in Central Africa, when the "Singapore" alighted at Entebbe, nearly 4,000 ft. above sea level, on February 5. He had taken off from the Nile at Mongalla in the morning and followed the Nile to Lake Albert, a distance of 250 miles. A further stage of 140 miles then brought him to Lake Victoria. His flight from London to Entebbe took 70 flying hours. On February 6 he left Entebbe for Kisumu with Sir William Gowers, Governor of Uganda, as passenger.

Great Flying-Boat Cruise

THE four R.A.F. "Southampton" flying-boats reached Akyab from Calcutta shortly after noon on February 3. In bright weather they arrived next at Rangoon on February 6 and received a cordial welcome. After remaining there for a week the "Southamptons" will proceed to Penang and Singapore. They will stay two months at Singapore and then continue to Australia, expecting to land at Melbourne in July.

"Saratoga" in the Panama

THE American aircraft carrier "Saratoga," on which the "Los Angeles" airship recently landed, passed through the Gatun locks in the Panama Canal on February 5. The locks are only 4 ft. wider than the ship, and for many yards the concrete lining on the walls of the middle and upper chambers was scraped. The ship is passing from the Atlantic to the Pacific.

American Record Attempt Fails

MR. CLARENCE CHAMBERLIN and Mr. Roger Williams made another attempt on the duration record on February 4, but soon after ascending from Byrd Field, Richmond, Virginia, they crashed from a height of 40 ft. They escaped injury, but the machine, a Bellanca monoplane, was badly damaged.

The Aerial Ambulance in Sweden

A RECENT dangerous night flight to save the life of a patient has won for two Swedish Army officers the Swedish medal for merit. In a remote village named Husum the invalid needed an urgent operation to save him from death. The situation was conveyed to the aviation centre at Oestersund, and the two airmen set off, covering the 200 km. in 80 minutes. The patient was placed on board and the return flight was made in complete darkness, while the night in the northern wilderness over which they were flying was bitterly cold. Also a dense fog prevailed and their destination,

Umeaa, could hardly be discerned, although searchlights were shown on the river. After circling the town they made a perfect landing in a field two miles away owing to shortage of petrol. The patient was saved by the operation. One of the airmen had his eyes hurt by the intense cold. The award to them was made by the King of Sweden. Many lives have been saved under similar circumstances by the pilots of the aerial ambulance service at the Swedish city of Boden, north of the Polar circle.

The Airship Mail

A MESSAGE from Washington states that following Comdr. Burney's suggestion a Bill was introduced into the House of Representatives on February 6 authorising the Postmaster-General to contract for mails by dirigible. Minimum trips are to be 2,000 miles with the minimum rate three dollars (12s.) per lb. The mooring mast at Lakehurst will also be available.

Col. Lindbergh's S. American Tour

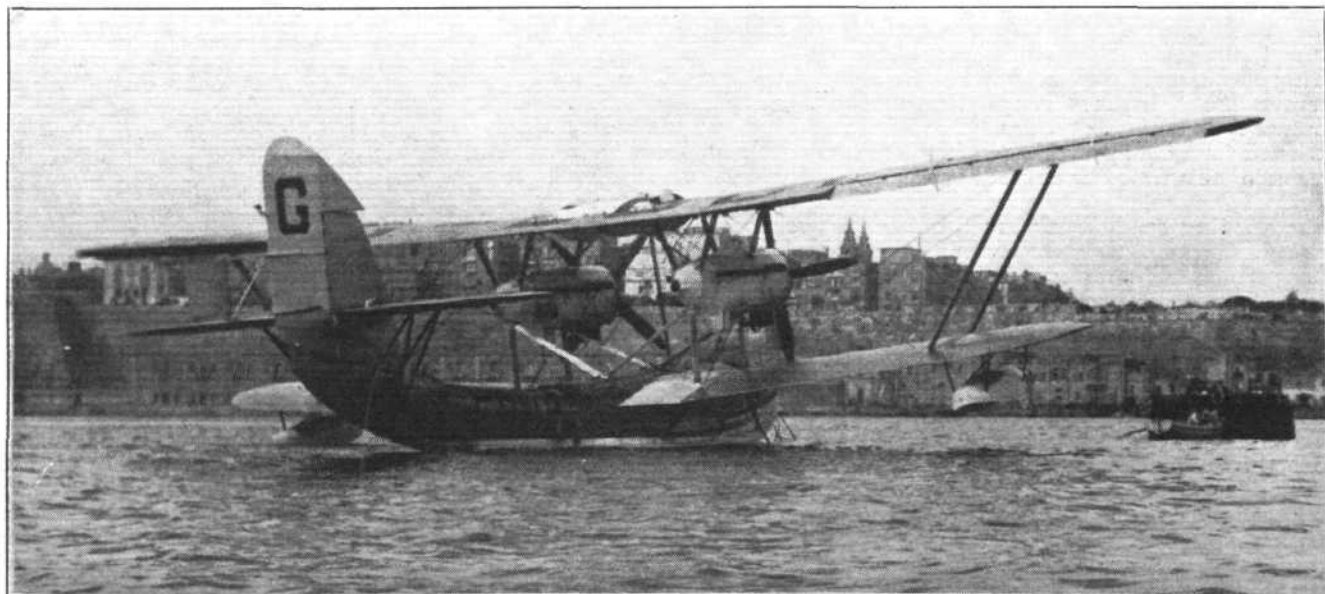
COL. LINDBERGH left St. Thomas, Virgin Islands, on February 2, and flew to San Juan, Porto Rico. A crowd of 100,000 people welcomed him and a public holiday was declared. He went on to Santo Domingo on February 4, and Port-au-Prince, Haiti, on February 5, where President Borno and a large crowd greeted him.

German Aviation for 1927

DURING the past year the German Lufthansa air company carried 102,681 passengers; 641,186 kgs. of freight; 821,921 kgs. of luggage; 479,816 kgs. of mails; and flew 9,208,029 kms. The corresponding figures for 1926 were—56,268; 258,464; 385,945, 301,945, and 6,141,479 respectively.

Success of Middle East Air Lines

THE *Times* for January 20 gave the results for the past year's working on the Middle East air route. In the period 91 schedule services between Cairo and Basra had been run with a 100 per cent. regularity, and the average lateness of arrival was never more than 30 mins., while for the greater part of the time it was measured in minutes. Miles flown totalled 134,025 in 1,415 hours, and while the average speed was 100 m.p.h., in December 125 m.p.h. was reached on one journey between Gaza and Cairo; and 130 m.p.h. in November between Baghdad and Basra. Once only a pilot landed, owing to a storm. Up to November 103,036 lbs. of mail and 1,133 passengers were carried. On the average the machines ran on a load of about 70 per cent.



SIR ALAN COBHAM AT MALTA: Our picture shows Sir Alan's Short all-metal "Singapore" flying-boat (Rolls-Royce "Condor" engines) in Valletta Harbour, prior to resuming the flight to Africa on January 21, after an enforced stay of over five weeks.

Meteorological Officer Wanted

THE New Zealand Government is to invite applications from England and New Zealand for an officer to take charge of and develop under the supervision of the Director of Meteorology the study of meteorology as applied to aviation.

Linking North and South America

CAPT. J. DONNELLAN, an ex-R.A.F. pilot, left Chicago on January 29 in a machine named "I Will," with the intention of opening an air line between North and South America. His proposed journey is 16,000 miles there and back, and will be made in stages of 500 miles. It is hoped to demonstrate the possibility of using a small monoplane fitted with a Curtiss engine for this air route. Capt. Donnellan is carrying a rifle, six days' rations and water, a parachute, maps, letters, 99 gallons of petrol and seven quarts of oil. He reached Louisville on the same day.

Taking It Easy!

FLYING OFFICERS VINCENT and NEWALL, who recently left England in two D.H. 9 machines for an air tour in the Far East, left Dijon on February 7 and arrived later at Marseilles. Their progress is likely to be slow as it is their intention to survey the commercial prospects of aviation in each country they visit.

The French American Tour

CAPT. COSTES and Lieut. Le Brix reached United States soil for the first time on February 4 when, in the course of their flight from S. America to New York, they landed at New Orleans from Mexico.

Millionaire Air Tourist

MR. VAN LEAR BLACK, the American millionaire, left Croydon on February 4 for Moscow in a Fokker-Jupiter air liner, chartered from the Royal Dutch Air Lines. The stage of 615 miles to Berlin was flown non-stop in six hours.

Twenty Years Ago!

Extract from "The Auto." (Precursor of "Flight"), Feb. 8, 1908.

"The Bertin Helicopter.—A helicopter machine has just been completed by M. Bertin, its chief peculiarity being two lifting screws on separate vertical shafts and a 150-h.p. 8-cyl. horizontal engine to drive them. The engine is situated in the centre of a tubular framework and drives the vertical shafts through bevel gearing. A continuation of the crankshaft is also fitted with a screw tractor for the purpose of obtaining longitudinal motion when the machine itself is in the air. The two lifting screws are situated at a height of about 1.8 metres above the base of the machine, and measure 2.4 metres in diameter. They are designed to run at a speed of 1,200 r.p.m. The complete machine weighs 310 kilogs."



SEVEN-AND-A-QUARTER MILES HIGH: Comm. Donati, the Italian pilot, who recently attained an altitude of 11,852 m. (38,886 ft.) on an Ansaldo-Dewoitine monoplane fitted with an Alfa-Romeo "Jupiter" engine. He is seen wearing his special flying kit and "Salvator" parachute.

An Echo of a Glorious Failure

BEARING on the unsuccessful but splendid attempt put up last November by Capt. McIntosh and Mr. Bert Hinkler to fly to India non-stop, the pilots in question have sent the following encouraging statement to the Bristol Aeroplane Co. respecting the "Jupiter" engine used in their Fokker monoplane:—

"We flew for a total period of 24 hours 42 minutes. During the whole of this time our engine never gave us a moment's anxiety."

"The weather conditions after the first two hours were abnormally bad, and we were compelled to use full throttle for long periods in our efforts to climb out of the fog and heavy snow clouds."

"After making our decision to turn back the engine was flown for a period of eight hours at full throttle."

"It is of interest to state that after landing in Poland the machine was left in the open in intense cold weather with snow falling on it for 42 hours, and when ready to take off the engine was started at the second swing."

"We are definitely of the opinion that no other aircraft engine has ever been subjected to such bad conditions, and we believe that very few other aircraft engines would have stood up to this gruelling test."—(Sgd.) R. H. MCINTOSH; B. HINKLER.

All the World's Aircraft

"ALL the World's Aircraft" for 1927, which is edited by C. G. Grey, and has just recently been published by Messrs. Sampson Low (price, two guineas net), is—thanks to the remarkable development that took place during the year 1927

—the most interesting issue of this useful annual that has appeared for some years. The progress made in aeronautics in all parts of the world during 1927 is presented in some considerable detail, not only in the text of the historical section, but by the numerous illustrations and drawings and specifications to be found in the technical sections dealing, respectively, with aeroplanes, aero engines, and airships.

The present edition retains much the same form as last year's—although we fancy it has been somewhat "cleaned up" and has now settled down to the improved arrangement introduced a few years back—so that the only improvements we can record for the 1927 edition consist of the extra amount of information contained between its covers, and, the provision of a very welcome book-mark!

Royal Air Force Flying Accidents

THE Air Ministry regrets to announce that as the result of an accident at Tidworth to a Woodcock machine of No. 17 (Bombing) Squadron, Upavon, on January 17, Pilot Officer Guy Stevenson, the pilot and sole occupant of the aircraft, was killed.

As the result of an accident to an experimental machine undergoing trial at Martlesham Heath on January 23, 1928, Flying Officer Harold Campbell Gambier Dauncey, the pilot and sole occupant of the aircraft, was killed.

As the result of an accident at Helwan Aerodrome to a D.H.9A. machine of No. 45 (Bombing) Squadron, Egypt, on January 30, the passenger in the aircraft, No. 361890, Leading Aircraftman Harold Edwin Fisher, died from injuries. No. 335796, Sergeant Frederick Ernest Omeara, the pilot, was seriously injured.

THE ROYAL AIR FORCE

London Gazette, January 31, 1928

General Duties Branch

The following are granted short service commns. as Pilot Officers on probation, with effect from dates indicated:—E. N. V. Everett (Jan. 13); E. J. H. F. Moreton (Jan. 13); A. F. Britton (Jan. 21). Flying Officer I. N. C. Clarke, D.S.C., is transf'd. to Reserve, Class C. (Jan. 17); Pilot Officer E. G. Searson relinquishes his short service commn. on account of ill-health (Feb. 1).

Stores Branch

The following are transf'd. to Reserve, Class B. (Jan. 26):—Sqn.-Leader A. Burtenshaw, O.B.E., M.C., Flight-Lieut. A. E. M. Dredge, M.B.E.

Accountant Branch

The following Pilot Officers on probation are confirmed in rank and promoted to rank of Flying Officer (Dec. 4, 1927):—H. D. Connor, B. Chadwell.

Medical Branch

Flying Officer N. I. Smith, M.D., is promoted to rank of Flight-Lieut. (Jan. 25). The following Flight Lieutenants are transf'd. to Reserve, Class Dii. (Jan. 28):—J. J. Clarke, B. Pollard.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the R.A.F. are notified:—

General Duties Branch

Wing Commanders: G. R. Bromet, D.S.O., O.B.E., to R.A.F. Depot, Uxbridge, 10.1.28. W. S. Douglas, M.C., D.F.C., to R.A.F. Station, North Weald, pending taking over command, 4.1.28. A. G. R. Garrod, M.C., D.F.C., to Oxford University Air Sqn., for duty as Chief Instructor, 10.1.28. E. L. Tomkinson, D.S.O., A.F.C., to H.Q., Mediterranean, for duty as Fleet Aviation Officer on Staff of C-in-C., Mediterranean Fleet, 31.12.27. A. F. A. Hooper, O.B.E., to R.A.F. Training Base, Leuchars, for Administrative duties, 6.2.28. R. P. Willock, to R.A.F. Station, Kenley, pending taking over command, 5.2.28. E. A. B. Rice, M.C., to Station H.Q., and Storage Section, Andover, to command, 1.2.28.

Squadron Leaders: J. C. P. Wood, to R.A.F. Depot, Uxbridge, 29.1.28. C. H. Keith, to No. 6 Sqn., Iraq, 10.1.28. A. G. Weir, to Air Ministry, Directorate of Organisation and Staff Duties, 5.2.28. G. H. Cock, M.C., to No. 99 Sqn., Upper Heyford, 21.1.28. P. H. Cummings, D.F.C., to No. 11 Sqn., Netheravon, 23.1.28. C. B. Dalison, A.F.C., to H.Q., Iraq, 13.1.28.

Flight Lieutenants: D. F. Anderson, D.F.C., to No. 2 Wing H.Q., India, instead of to H.Q., India, as previously notified, 6.12.27. E. H. D. Spence to R.A.F. Depot, Uxbridge, 3.1.28. E. F. Turner, A.F.C., to School of Balloon Training, Larkhill, 24.1.28. R. A. George, M.C., to R.A.F. Depot, Uxbridge, 1.2.28. S. F. Vincent, A.F.C., to No. 1 Sqn., Tangmere, 30.1.28. P. Murgatroyd, to No. 47 Sqn., Middle East, 2.1.28. R. M. Davy, to H.Q., Transjordan and Palestine, 8.1.28. D. C. Prance, to R.A.F. Depot, Uxbridge, 1.2.28. J. I. T. Jones, D.S.O., M.C., D.F.C., M.M., to Home Communication Flight, Northolt, 1.2.28. F. W. W. Wilson, to No. 480 Flight, Calshot, 20.1.28. A. S. Ellerton, O.B.E., to No. 99 Sqn., Upper Heyford, 28.1.28. G. H. Mills, to No. 100 Sqn., Bicester, 18.1.28.

Flying Officers: H. C. V. Jolleff to No. 99 Sqn., Upper Heyford, 27.1.28. V. Harris, to No. 8 Sqn., Middle East, 31.12.27. C. H. A. Stevens, to No.

Sec. Lieut. A. McL. Blain is deprived of permission to retain rank on conviction by the Civil Power (Dec. 22, 1927).

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Flight-Lieut. C. H. R. Johnston is promoted to rank of Sqn.-Leader (Jan. 31). The following Flying Officers are promoted to rank of Flight-Lieuts. (Jan. 31):—S. C. O'Grady, M.C., C. R. Vaughan, H. V. Stammers, D.F.C., H. Lawson. Flying Officer F. J. Brunton is transf'd. from Class C. to Class A. (Dec. 8, 1927); Flying Officer H. M. Gibbs is transf'd. from Class A. to Class C. (Jan. 27). The following Flying Officers are transf'd. from Class B. to Class C.:—A. C. Clinton (Aug. 14, 1927); J. S. C. Robinson (Dec. 11, 1927); R. C. Presland (Dec. 28, 1927).

The following Flying Officers relinquish their commns. on completion of service:—E. M. Bates (Aug. 12, 1927); A. T. Daw (Dec. 16, 1927).

Medical Branch

Flight-Lieut. G. R. Nodwell, M.B., is transf'd. from Class Di. to Dii. (Jan. 29).

15 Sqn., Martlesham Heath, 1.2.28. F. G. H. Ewens, to H.Q., Iraq, 1.1.28. G. E. G. Lywood, to R.A.F. Depot, Uxbridge, 26.1.28. F. J. Pressanges, to No. 27 Sqn., India, 1.1.28.

Pilot Officers: W. G. Cheshire, to No. 47 Sqn., Middle East, 19.1.28. A. R. Grenfell, to R.A.F. Depot, Uxbridge, 13.1.28.

Stores Branch

Wing Commander: C. L. Archbold, to H.Q., Air Defence of Great Britain, Uxbridge, 26.1.28.

Flight Lieutenants: R. Craig, to H.Q., Middle East, 5.1.28. A. E. M. Dredge, M.B.E., to R.A.F. Depot, Uxbridge, 5.1.28. L. N. Sargent to Elect. and Wireless Sch., Flowerdown, 1.2.28.

Pilot Officer: A. H. E. Frost, to H.Q., Cranwell, on appointment to a Permanent Comm., 19.10.27.

Accountant Branch

Flight Lieutenants: W. W. Deane, to R.A.F. Depot, Uxbridge, 4.1.28. J. M. Adams, to No. 45 Sqn., Middle East, 6.1.28.

Flying Officers: R. W. Freeman, to R.A.F. Depot, Uxbridge, 15.1.28. F. M. Hall, to R.A.F. Depot, Uxbridge, 17.12.27. R. W. L. Glenn, to Aeroplane and Armament Experimental Estab., Martlesham Heath, 27.1.28.

Medical Branch

Flying Officers: V. V. Brown, to No. 5 Flying Training Schl., Sealand, 23.1.28. M. Clancy, to No. 1 Flying Training School, Netheravon, 23.1.28. F. E. Lipscomb and C. P. O'Toole, to R.A.F. Depot, Uxbridge, 23.1.28. S. B. S. Smith to Elec. and Wireless Sch., Flowerdown, 23.1.28. G. H. Williams, to Aeroplane and Armament Experimental Estab., Martlesham Heath, 23.1.28. D. A. Wilson, to H.Q., Air Defence of Great Britain, Uxbridge, 23.1.28.

Chaplains' Branch

Revd. J. A. Jagoe, M.A., to R.A.F., Base and Stores Depot, Iraq, 3.12.27.

PERSONALS

Married

FLIGHT-LIEUT. W. W. DEANE, R.A.F., was married on January 26 at St. Michael and All Angels Church, Weyhill, to FLORA DOUGLAS, second daughter of Maj. and Mrs. J. W. SMITH, of Weyhill.

The marriage took place on January 26 at St. Margaret's, Westminster, of Mr. KENELM EDWARD LEE GUINNESS, son of the late Capt. Benjamin Guinness and of Lady Henrietta Guinness, and Miss JOSEPHINE STRANGMAN, younger daughter of Sir Thomas and Lady Strangman, of 3, Buckingham Gate and 19, St. James's Square.

To be Married

THE marriage arranged between FLIGHT-LIEUT. L. CHISMAN and Miss ROSAMUND HARRIS will take place quietly at St. Thomas's Church, Lymington, on Monday, February 20, at noon.

AN AERONAUTICAL EMPLOYMENT BUREAU

Some readers of FLIGHT will no doubt remember that in our issue of July 22, 1926, we mentioned that one of our pioneer airmen, Capt. F. Warren-Merriam, A.F.C., A.F.R.Ae.S. was commencing in business as an Aeronautical Consultant and Agent and was also running an Employment Bureau for Aviation personnel at 64, Victoria Street, London, S.W. They will, we feel sure, be pleased to hear that this sporting venture has met with a considerable degree of success.

As far as the employment side is concerned he is frequently asked by various aircraft firms to supply all grades of personnel, which he is able to do with rapidity and success. He has further been approached by firms in the Colonies, with which he is in close touch, for the supply of their personnel. Incidentally, one of his old pupils is the head of a big Colonial aircraft concern.

With regard to the Consultancy, he has granted hundreds of interviews and given free advice to intending Air Force Officers and to recruits to Civil Aviation coming both from the R.A.F. and from various branches of the engineering profession.

He is being assisted by Capt. C. R. Vaughan (an old pupil) who is available for test or demonstration work, and has the use of the excellent aerodrome and hangars at West Cowes (which have generously been lent by Mr. S. E. Saunders),

always at the disposal of inventors or others who wish to "try out" any improvements or inventions. Furthermore he has a staff of several designers and draughtsmen, who are available to give expert technical opinion on any such inventions.

Employers, therefore, are invited when seeking employees to communicate direct with Capt. Merriam's Aviation Employment Bureau, which for the past two years has been running with satisfaction and advantage both for employers and employees. The growing success of the Bureau may, perhaps, be attributed to the fact that all applicants are personally interviewed by Capt. Warren-Merriam, who is well-known as a pioneer aviator with a long-standing record, and who has a thorough understanding of men, their temperaments and initiative. Much time and study are spent on individual applicants. Thus, through the medium of his Bureau, we are assured that the best pilots and men for all branches of aviation can be obtained with absolute confidence, whereas photographs and written matter unfortunately must often misrepresent a man's capability and result badly for both parties concerned.

Taken all round his Bureau is fulfilling a useful function to aviation in general. We wish it even greater success and hope that it will be more extensively used in the near future by all who require assistance in the world of Aeronautics.

R.A.E.S. AND INST.AE.E.

Official Notices

The Trustees of the Daniel Guggenheim Fund for the Promotion of Aeronautics have, for the second year in succession, made the munificent grant of \$5,000 to the Royal Aeronautical Society. The grant made in 1927 proved to be of the utmost value to the Society, enabling it to extend its scope and influence and take part in bringing about that state of air-mindedness which is so much a part of its objects as it is that of the Daniel Guggenheim Fund. During the year the membership of the Society was greatly increased, the size of its Journal was doubled, many papers were published which would, without the grant from the Fund, have had to be held over, and a number of new branches were started.

The Daniel Guggenheim Fund for the Promotion of Aeronautics was founded in 1925 by Daniel Guggenheim of New York. The object of the Fund is exactly that stated by its title, and though it is American in its origin, its scope is world-wide. The generous gift of \$10,000 to a British Aeronautical Society is only one example of the broad outlook of the Trustees of the Fund. The Trustees have offered \$150,000 in prizes in a Safe-aircraft Competition which is open to the whole world. The first five entries were received from British inventors. The competition has already given a great impetus to the study of safety devices and will result in a notable advance in the whole field of aeronautics. The closing date of entry is October 31, 1929, or any time prior to that date which the Fund may consider that the object of the competition has been achieved. The full rules for the competition are published in the Journal of the Royal Aeronautical Society for June, 1927.

Postponement of Lecture.—The lecture arranged for February 23 by Dr. Hele-Shaw on "Variable Pitch Propellers" has been postponed until the results of the full-scale tests are known. It is hoped that the postponed lecture will be delivered some time towards the end of March.

J. LAURENCE PRITCHARD, Secretary.

SOCIETY OF MODEL AERONAUTICAL ENGINEERS

The Annual General Meeting of the S.M.A.E. was held at the Y.M.C.A., Tottenham Court Road, on January 27. After the reading of the Minutes of the previous Annual General Meeting and the Accounts for the year, attention was given to the election of officers for 1928. Results by ballot were as follows:—

President: Air Vice-Marshal Sir Sefton Brancker, K.C.B., A.F.C. **Vice-Presidents:** Dr. A. P. Thurston, D.Sc., F.R.Ae.S., and F. de P. Green. **Chairman:** R. M. Balston. **Vice-Chairmen:** A. F. Houlberg and Capt. F. L. M. Boothby, C.B., R.N. **Hon. Secretary:** S. H. F. Crouch. **Hon. Treasurer:** W. E. Evans. **Technical Secretary:** R. N. Bullock. **Members of the Council:** Capt. V. Dibovsky, J. Pelly-Fry, S. C. Hersom, R. Hutchinson, S. G. Mullins, T. H. Newell, H. C. Onion, D. A. Paveley, L. Plater, A. Rasmussen.

Following this, the rules for the Sir Charles Wakefield Cup International Competition, having previously been passed by the Committee, were read before the meeting for final approval, and were subsequently passed as below:—

General Rules for all Competitions

1. The Cup shall be known as "The Wakefield Cup for International Competition," hereafter referred to as "the Cup."
2. The Cup shall be perpetual, and shall remain the property of the Society of Model Aeronautical Engineers (Great Britain), hereafter referred to as "the S.M.A.E."
3. The Cup shall be competed for annually, unless the S.M.A.E. give its consent to suspension owing to exceptional conditions.
4. The Cup shall be awarded to the Society represented by the entrant of the winning model.
5. Any money prize shall be awarded to the entrant of the winning model.
6. Suitable bond for the proper care and return of the Cup shall be required by the S.M.A.E. from any Society into whose possession the Cup may at any time be delivered.
7. All entries shall be made through the Society in each country affiliated to the International Aeronautical Federation, or through such a Society's model section, or through the Model Building Society recognised by such an affiliated society. Though entries must be made through a society qualified as stated in this rule, entrants need not of necessity be members of the society through which they make their application.
8. There shall be a fee of 5s., or its equivalent in foreign currency, per entrant, to be paid through each competing society and sent with the notice of entry. This fee shall be returnable after the event for each model, which is received by the latest date fixed for the receipt of models.
9. The entrant must be the owner of the model he enters.
10. No entrant may enter more than one model.
11. At least three models must compete, otherwise no competition can be held and the Cup shall be returned by the holder to the S.M.A.E. until the following year's competition.
12. Each country shall be responsible for the selection of its entrants, who shall not number more than six.
13. The competition shall always be held in open air and on an aerodrome approved by the International Aeronautical Federation.
14. The competition shall always be for model aircraft being neither supported wholly nor in part by any form of aerostat or aerostats.
15. The first competition shall be held in Great Britain and successive competitions in the country which last won the cup.
16. The rules for each competition shall be made by the S.M.A.E. in conjunction with the Society holding the cup until such time as the formation of an International committee.
17. Models may be flown by a proxy appointed by the entrant.
18. In the event of the entrant not being able to attend in person or able to appoint a proxy, every effort must be made by the Society last winning the cup and in whose country the competition is being held, to appoint an experienced model flyer to fly such a model, but no responsibility for damage to or by such a model need be accepted by that society, or its agent.

Rules for Competition to be held in Great Britain during 1928.

1. The competition shall be held in Great Britain subject to rule number 13 of the General Rules.
2. Each model must rise from the ground from a standstill entirely under its own power.
3. The competition shall be for duration of flight, such duration being taken from the time the model is released until it first touches some solid obstacle after flight or until passing out of sight of the judges.
4. Each entrant shall be allowed three attempts during the competition. The best of the three attempts to be counted.
5. When called by the judges each model must be ready for flight within 3 minutes, or the entrant will be liable for disqualification from that round, except in circumstances which are considered satisfactory by the judges.
6. Minor adjustments may be made between competition flights, but trial flights may only be made with the permission of the judges.

7. The design of the model is not restricted, except that rubber motors, air containers and fuel tanks must be concealed and that the fuselage or fuselages be fully covered and conform to the following formula:—
The minimum value of the maximum cross-sectional area of each fuselage = $\frac{(\text{Length of model from nose to tail})^2}{10}$

8. Any form of power plant may be used.

9. No model must weigh more than 11 lbs. avoirdupois (5 kg.).

10. The decisions of the judges shall be final.

It is hoped that it will be possible to publish the list of flying fixtures, including the International competition, and their dates, next week.

S. H. F. CROUCH (Hon. Secretary),
23, Mayfair Avenue, Essex.

Aero Golfing Society

THE following is a list of fixtures for the above society for 1928—February 9, Team Match v. Music Industries Golfing Society, St. George's Hill, Weybridge; March 3, Team Match v. Moor Park Golf Club, Moor Park, Rickmansworth; March 15 (Winter Meeting). The Sir Samuel Instone Challenge Cup, Coombe Hill Golf Club, Kingston Hill; May 17 (Spring Meeting), FLIGHT Challenge Cup, Porters' Park Golf Club, Radlett, Herts.; June 9-10, Team Match v. R.A.F. (Martlesham and Felixstowe), Felixstowe Golf Club, Felixstowe; June 20, Team Match v. Porters' Park Golf Club, Porters' Park; October 8, Team Match v. Stage Golfing Society, Moor Park; October 24, "Cellon" Challenge Cup, Denham Golf Club, Denham. **Captain's Prize.**—The captain for 1928, Mr. Percivale Barry, will present a prize at the end of the year to the member who puts in the lowest aggregate net score in the Three Society Challenge Cups (Medal Rounds).

R.A.F. Rugby

THE dates for the Inter-Service Rugby matches, in which the R.A.F. meets the Navy and Army, are as follows:—February 11, R.A.F. v. Navy; March 3, Navy v. Army; March 24, R.A.F. v. Army. All three matches will be played at Twickenham.

SIDEWIND

Mr. C. B. KAY, the general works manager of the Sunbeam Motor Car Co., Ltd., has been appointed to a seat on the board of directors, in appreciation of his many years of service with the company. Mr. Kay joined the company 22 years ago, subsequently taking charge of the experimental and racing departments, and in 1912 he became assistant engineer to Mr. Louis Coatalen. Two years later Mr. Kay was made general works manager, which position he still holds, and his appointment to the directorate marks the high esteem in which he is held.

AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

APPLIED FOR IN 1926

Published February 9, 1928

- 17,304. U. NISTRI. Camera apparatus for aerial photography. (255,096.)
24,796. F. E. HELLIER. Apparatus for measuring b.h.p. of aero engine and the efficiency of its propeller and the attachment of a screw propeller to its driving-shaft. (283,618.)
25,419. AIRSHIP GUARANTEE CO., LTD., and B. N. WALLIS. Lighter-than-air aircraft. (283,635.)

APPLIED FOR IN 1927

Published February 9, 1928

- 25,500. A. ROHRBACH. Monoplane with wings attached to the sides of the fuselage. (278,020.)

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